

Hallington

28,453 /c

Hepburn





Digitized by the Internet Archive
in 2017 with funding from
Wellcome Library

<https://archive.org/details/b28762939>

GENERAL VIEW
OF THE
AGRICULTURE
OF
EAST LoTHIAN.

THE UNIVERSITY OF

CHICAGO

LIBRARY

Not published
1795

GENERAL VIEW
OF THE
AGRICULTURE
AND
RURAL ECONOMY
OF
EAST LoTHIAN.

WITH
OBSERVATIONS ON THE MEANS OF THEIR IMPROVEMENT.

BY
GEORGE BUCHAN-HEPBURN, Esq.
OF SMEATON.

DRAWN UP
FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

FORTUNATUS ILLE! DEOS QUI NOVIT AGRESTES.

VIRG.

EDINBURGH:
PRINTED BY JOHN MOIR.

1794.

WELLS

ESOL

WELLS

WELLS



WELLS

WELLS

WELLS

WELLS

WELLS

WELLS

WELLS

WELLS

WELLS

WELLS

WELLS

WELLS

TO THE READER.

IT is requested that this paper may be returned to the Board of Agriculture, at its office in London, with any additional remarks and observations which may occur on the perusal, *written on the margin*, as soon as may be convenient.

IT is hardly necessary to add, that this report is, at present, printed and circulated for the purpose merely of procuring farther information respecting the Husbandry of this district, and to enable every one to contribute his mite to the improvement of the country.

THE Board has adopted the same plan, in regard to all the other Counties in the United Kingdom; and will be happy to give every assistance in it's power, to any person who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in Husbandry.

LONDON, }
June 1794. }

THE HISTORY OF THE

... of the ...
... of the ...
... of the ...

... of the ...
... of the ...
... of the ...

... of the ...
... of the ...
... of the ...

... of the ...

... of the ...

... of the ...

... of the ...

... of the ...

... of the ...

... of the ...

... of the ...

CONTENTS.

	Page.
INTRODUCTION - - - - -	7
BRANCH I.	
Name - - - - -	11
Situation and Extent - - - - -	ib.
General face of the County - - - - -	12
Rivers - - - - -	13
Minerals - - - - -	ib.
Climate and Soil - - - - -	ib.
Districts, <i>First, Second, Third and Fourth</i> - - - - -	14
Soil - - - - -	18
Woods and Planting - - - - -	ib.
Inclosing - - - - -	20
Beech Hedges - - - - -	21
Birch Hedges - - - - -	22
BRANCH II.	
Population - - - - -	26
Royal Burghs - - - - -	ib.
Trade - - - - -	ib.
Manufactures - - - - -	27
BRANCH III.	
<i>Explanation of Technical Expressions, viz.</i>	
— Acre - - - - -	32
— Measures of Corn - - - - -	33
— Measures of Weight - - - - -	38
— Fiar Prices - - - - -	39
— Table of Fiars - - - - -	42
— Terms of removing from, and entering to Farms - - - - -	45
— Steelbow - - - - -	ib.

	Page.
<i>AGRICULTURE</i> - - - - -	46
Ancient Husbandry - - - - -	48
Fallow - - - - -	50
Hollow Draining - - - - -	51
Straighting of Ridges - - - - -	ib.
Broad Clover and Rye Grass - - - - -	52
Turnip Husbandry - - - - -	55
Sir George Suttie's Out-field Culture - - - - -	57
Turnip Husbandry upon dry gravelly Loams, in the Low District	58
Deep Loams upon a dry bottom - - - - -	61
Loams upon a hard and clay bottom - - - - -	64
Thin clays upon a hard or cold bottom - - - - -	66
Agriculture in the Higher or Third District - - - - -	67
Climate for Wheat - - - - -	68
Seasons of Sowing - - - - -	69
Kinds of Seed Wheat - - - - -	71
Pickling of Seed Wheat - - - - -	72
Smut in Wheat - - - - -	73
Barleys - - - - -	75
Seed Oats - - - - -	76
Pease - - - - -	77
Beans - - - - -	ib.
Artificial Grasses - - - - -	ib.
Northern Lucern - - - - -	78
The Culture of the Potatoe - - - - -	79
The Curl in the Potatoe - - - - -	80
<i>Manures</i> - - - - -	83
—Lime - - - - -	85
—Compost - - - - -	86
—Foul marine Salt - - - - -	87

	Page.
— Paris Plaister	88
— Refuse of Whale Oil	89
<i>Instruments of Husbandry.</i>	ib.
— The Plough	ib.
— Brake Harrow and small ditto	90
— Drill Barrows and Horse hoes	ib.
<i>Prices of Labour.</i>	ib.
— Stationary Servants employed in Husbandry	ib.
— Female Servants	93
— Yearly wages of servants, as fixed by the Justices of Peace, for the Counties of Kent and Gloucester, in 1731	95
— Wages of a day Labourer	ib.
— Hay Harvest	96
— Corn Harvest	ib.
<hr/>	
Farm Stock	97
Black Cattle	98
Sheep	99
Sheep Husbandry in the High District	100
Food of the common People	104
Burdens affecting the Tenants	105
1st, Schoolmaster's Salary	106
2dly, Poor's Rates	ib.
3dly, Highway money	ib.
Thirlage	ib.
Size of Farms	113
Size of the Inclosures	116
Influence of large Farms upon Population	ib.
Statute of Henry VII.	117
Covenants in Leases	122

	Page.
Duration of Leases - - - - -	125
Rents - - - - -	ib.
<i>Hints for Further Improvements</i> - - - - -	131
Hollow draining - - - - -	ib.
Deep plowing - - - - -	133
Tills - - - - -	ib.
Frequent Fallow, and sowing upon the Winter Furrow - - - - -	ib.
Sowing under Furrow - - - - -	135
Early Sowing - - - - -	ib.
Ruta Baga - - - - -	137
Plowing with Oxen - - - - -	138

The Rook or Corn Crow - - - - -	140
Pidgeons - - - - -	143
Bees - - - - -	144
Agricultural Machinery - - - - -	ib.
Barley Mill and Fanners - - - - -	145
Flax or Lint Mills - - - - -	146
Threshing Machines - - - - -	147

BRANCH IV.

Respecting the state of the Roads in the County of East Lothian	151
Conclusion - - - - -	155

ERRATA.

- PAGE 11. In the Note, For *ruggy* read *rugged*.
 — 17. In the Note, For *Boyle* read *Bogle*.
 — 18. Penult line, For *Tweddale* read *Tweeddale*.
 — 19. Line 6th, Read, *to be of an older date, &c.*
 — 20. — 3d. For *the fetrees* read *these trees*.
 — — 8th from the bottom, For *Linmore-love* read *Lennon-love*.
 — 24. — 8th, For *Cott* read *Colt*.
 — — 12th, For *gowing* read *growing*.
 — — 19th, For *tree* read *the*.
 — 33. In the Note, For *Land area* read *Lanae area*.
 — 54. Line 4th from the Bottom, For *sowed* read *saved*.
 — 70. Line 19th, For *invloed* read *involved*.
 — 81. — 26th, For *pungy* read *spungy*.
 — 83. — 11th, For *plan* read *plant*.
 — 103. — 25th, For *five* read *few*.
 — 125. — 18th, For *as* read *a*.
 — 128. — 27th, For *o* read *of*.
 — 137. — 18th, For *runs 4*, read *runs from 4*.
 — 145. — 8th, For *when* read *where*.
 — 146. — 21st, For *each* read *to each*.
 — 147. — 11th, For *suppose* read *to suppose*.
 — *ibid.* — 13th, For *Mitchael* read *Michael*.
 — 151. For BRANCH THIRD read BRANCH FOURTH.
 — 153. In the Note, penult Line, For *was* read *were*.
 — 154. Line 25th, For £. 300 read £. 1400.
 — 156. — 11th, — 12th, For *dedactive* read *didaotive*.

INTRODUCTION.

THE industrious husbandman, residing in the centre of his farm, lives, in some measure, secluded from society : As the principal operations in his profession are carried on in the field, he must be almost constantly on the watch, to seize and improve every change in the weather, so that he can give a small portion only of his time to social intercourse.

Thus situated, his means of information, is evident, must be narrow, and in a great degree confined to his own practical observation †.

Agricultural experiments likewise are slow in their process, requiring in general twelve months to complete them ; and as these experiments are liable to great uncertainty, from sudden and unexpected changes in the weather, the life of man seems much too short for any individual to form a practical and productive system for the culture of the earth, from his own experience. It will not therefore appear surprising that agriculture, confessedly the most useful of all the arts, should be the one that advances most slowly to perfection.

The difficulties of the husbandman are still further increased, by the almost infinite varieties of climate and soil. Experience has sufficiently proved, that a practice highly advantageous in one climate, and upon one species of soil, is by no means adapted to a different climate and a different soil.

A

† Numerous instances will be given in the course of this Report, of the slow progress of improvement in agriculture, and of the ignorance or inattention of the husbandmen of this county in former times, to the most useful discoveries carried on even in the adjoining farm.

Under these circumstances, the institution of the Board, whose object it will be, to collect the experience and observation of individuals in the various soils and climates in the United Kingdom, as so many facts ; and to arrange these facts under their proper hands, must prove highly beneficial, by diffusing more useful practical knowledge, and impressing it upon the mind of the actual cultivator of the ground more forcibly, than all the theoretical writings upon the subject.

The theorist, in agriculture, ought no doubt to be listened to with attention by the practical husbandman ; but his opinions must be adopted with caution, and not without due consideration, both as to the climate and the soil in which his improvements are proposed to be introduced.

At the same time, if the husbandman should be instructed in the first principles of agriculture, before he enters upon the practice of it, and if he shall thereby be enabled to carry science to the field, he would proceed with more confidence, and his experience and his observations would ripen into system more rapidly than by any other mode.

The people of Scotland have just ground to hope, that the patriotic institution by Mr Pulteny, of an Agricultural Professorship in the University of Edinburgh, and the judicious choice he has made of the person who now fills that chair, will in due time produce this salutary effect ; and that the rising generation of husbandmen, in this part of the United Kingdom, will progressively be instructed in the science or first principles of their profession.

The investigations also of the Board of Agriculture and Internal Improvement must prove of singular advantage, in collecting so large a mass of useful materials, from which a practical theory may be reared for every soil and climate.

The person therefore who suggested the idea of this Board, and the minister who adopted it, deserve the thanks of their country. And as the business has been committed, in the present instance, to men, confessedly of the most respectable characters, whose abilities, for the faithful discharge of the

trust reposed in them, keep pace with their patriotic desire to render it most useful, every good man must felicitate his country upon the institution, and is bound also to use his best exertions towards rendering it successful.

Strongly impressed with these feelings, I shall now endeavour, to the best of my abilities, to lay before this Honourable Board an accurate view of the Rural Economy of EAST LOTHIAN; I undertake this work with the less diffidence, as I consider the great object of such a Report is, to state facts; these I shall narrate with truth; and, occasionally, offer such observations as seem naturally to result from the narrative.

It will perhaps be proper to begin with giving a general view of the plan proposed to be adopted in the following Report.

The *First Branch* will comprehend the name, the boundaries, and the general face of this county; the rivers and the minerals contained in it, as hitherto explored; the soil and the climate, (which will naturally lead to the division into districts :) The woods, the planting, and the inclosures, and the different modes practised in making these inclosures.

The *Second Branch* of this Report will give a general view of the population and of the manufactures of the county, as opposed to, or distinct from agriculture.

The *Third Branch* will embrace the history of agriculture, with the ancient and most approved modern practice, in the following different species of soils; viz. *First*, The dry gravelly loams; *2dly*, The deep loams upon a dry bottom; *3dly*, The rich deep loams upon a hard or a clay bottom; and, *lastly*, deep and thin clays, upon a cold tilly bottom.

As this branch applies to the principal object of the Report, it will naturally divide itself into a considerable number of different heads, which it seems at present unnecessary to enumerate.

The *Fourth Branch* will give an account of the roads, and of the different plans which of late years have been adopted

for the improvement of them, with such miscellaneous particulars as may not fall under any of the preceding heads.

In the Appendix, if leisure shall permit, it is proposed, in the *first* place, to illustrate, by a reference to some important æras in the history of Scotland, the influence which a well constituted government has upon agriculture and upon industry in general. And, *2dly*, to state historically the principal statutes respecting agriculture, and the exportation and importation of corn, with some observations upon the causes that gave rise to these statutes, and the effects resulting from them.

The object in view, under this head, is, to lead to the investigation of the principles upon which the present laws respecting this branch of internal economy are founded, and to suggest some alteration in that code, for the purpose of increasing the quantity of corn produced in Great Britain, to enable us, at least, to feed ourselves; and to relieve us from the dreadful necessity of depending upon the precarious industry or bounty of foreign nations, for this essential article of our existence; and, if possible, to render corn, as it has been in former times, an important article of export from Great Britain, under the influence of laws founded upon different principles.

BRANCH

BRANCH FIRST.

THIS county is entered in the rolls of Parliament by the name of the shire of *Haddington*; but the common name of *Lothian*, which at present comprehends the three counties of East, West, and Mid Lothian, is certainly of high antiquity; and an ancient author † informs, that *Laudonia*, in his time, was an extensive district of country, beginning at the Tweed, and stretching considerably beyond the city of Edinburgh.

Let the painful Antiquarian stop to investigate whether *Laudonia*, with its Latin termination, is of Celtic, Roman, or of Saxon original, and after much diligent and anxious research, he will perhaps inform us, that it may be derived from any one of these languages; for the Celtic unquestionably was the language of the inhabitants of this county,* when it was conquered by the Romans, who in their turn yielded to the Saxons; and for sometime it was under the dominion of the Saxon kings of *Mercia*.‡

Situation and Extent.—The county of East Lothian lyes along that part of the south bank of the Frith of Forth, where

B

† Polydorus Virgilius *Historiæ Angliæ*: The dedication of this history to Henry 8th, is dated at London, in the month of August 1533,

* An ingenious friend of mine, who is thorough master of the Celtic or Gaelic language, informs, that the Celtic names of villages were taken from the local situation of the adjacent grounds, or from some mark or peculiar circumstance that occurred at the first erection of the village; as, for example, *Garvald*, in the Celtic, means steep or rugged banks. *Ballincrief* means, in the same language, the place of the allar tree, and metaphorically, of springs, which is the exact description of the local situation of these two villages in this county. *Balgone*, is the town of the smith. *Gulan*, is the hill upon the plain; this eminence lies upon the north side of the vale of Peffer.

‡ We have also sundry names of Saxon original. As *Letbam*, the low village, *Tynningham*, the village upon the Tyne.

it falls into the German Ocean, and which, from the breadth of it, may be called more properly an arm of the sea. §

The Forth of course forms its Northern boundary: The county of Edinburgh bounds it on the West: The county of Berwick on the South; and, on the East, it is bounded partly by the German Ocean, and partly by the county of Berwick.

The great post road from London to Edinburgh enters this county at Dunblaw bridge, which is the extreme Eastern point of it; and it passes through it by Dunbar, Haddington, and Tranent, to Ravensheugh bridge, which is the extreme Western point.

The distance betwixt these two points, following the course of this road, measures about 27 English statute miles; but if taken in a straight line, the distance will not much exceed 24 miles.

The extreme breadth of this county, from the sea-port of North Berwick to Killpallat burn, which divides it from the county of Berwick, is about 15 miles, but the medium breadth will not exceed 10 miles.

General Face of the County.—The author already mentioned, in speaking of *Laudonia*, says, it is *admodum montosa*, which is a description not inapplicable to this county, as it not only rises in general rather rapidly from the shore, but the surface is also uneven, and broken with frequent ascents and descents, as it stretches from the sea southwards up to the mountains of Lammermoor; and it has a general inclination northward from these mountains.

It seems highly probable, that in this author's time, who was in Scotland in the reign of James the *First*, the greater part of these high grounds were then in the rude state of uncultivated nature, which gives a rugged and mountainous appearance to the face of the country; although the absolute elevation above the level of the sea is not great, nor the ascent so steep and rapid as it seems; and the fact is, that now these as-

§ At an average about 15 miles.

cents, in the three districts of the county to be afterwards mentioned, with a very few exceptions, in the emphatic language of Virgil, *dominantur aratro*; and indeed the culture of the plough is the great object of the industry, and the chief source of the wealth of this county.

Rivers.—The *Tyne* is the only stream of water in the county, which, small as it is, deserves the name of a river. It runs nearly in a direction from West to East through the heart of the county, and falls into the sea below Tynningham, the seat of the Earl of Haddington.

Upon the sands at the mouth of this river, there is a tolerable safe anchorage every tide for vessels of 30 or 40 tons burden; and in stream tides, it will receive vessels of about 100 tons. But the access from the sea to these sands is rocky and dangerous.

There are, besides the *Tyne*, some small rivulets interspersed over the county; but in general it may be said to be indifferently watered, and many of the springs, by passing through coal or iron stone, are impregnated with minerals, and the water issuing from these springs is what we vulgarly call *hard*.

Minerals.—The Western part of this county is full of coal, which was formerly sold at the pitt at about 4d, now generally at 6d. per load of 200 weight; and nature has kindly distributed considerable beds of limestone in different parts of the county, insomuch that it is difficult to find any point that exceeds the distance of six miles from the lime rock; with these exceptions, the greatest part of the county lyes upon a bed of red granite or iron stone of considerable specific gravity.

Climate and Soil.—The average latitude of this county may be taken at about 56 degrees North, and, notwithstanding that it lies in so high and apparently so cold a latitude, yet, from the vicinity of the sea, which nearly surrounds it upon three sides, the climate is comparatively mild and temperate,

generally adapted to the culture of corn; and although the county does not, as already said, extend above 10 miles at an average from North to South, there is more variety of climate in this small space than might naturally be expected.

The mildest winter, the earliest spring and summer and harvest, we have to boast of, are to be found along the sea coast; the winter grows more severe, and the other seasons gradually later, as the grounds retire from the sea, and advance in elevation towards the mountains, inasmuch that, *cæteris paribus*, there is nearly three weeks of difference betwixt the harvest upon the lands on the coast, and upon the lands at the foot of the mountains; the seasons in the intermediate space betwixt these two extremes, vary generally in proportion as the ground retires from the sea.

Districts.—This variety in the county, with respect to height of ground, is connected with a difference in point of climate, which suggests a division of it into districts, now to be mentioned.

Beginning at the western extremity of the county, below Fallside, and drawing an ideal line by Dolphinston, Preston, Seaton-hill; the Byres, Garleton, Athelstonfoord, East Fortune, Cracho, Pencraik-Hill below Traprain, Hetherwick, Belton, Bourhouses and Pinkertown, to Dunglass, will give the lower and the most fertile district of the county.

The Strath of Tyne, and the middle district, begins upon the South, about Ormiston, and goes along by Salton, Whittingham, Stenton and Broomhouse, to the bottom of Dounhill, where this ideal line touches the northern boundary of the lower district.

Although these two districts are in general of a rich and fertile soil, they are occasionally intersected with large tracts of land of very inferior quality; as, for example, in the low district, the Strath or vale of Peffer, beginning on the West with Luffness moor, continues in a South East direction to the sea,

In the middle district, the inferior soil begins at Tranent-moor, and runs eastward by Glads-moor to the western part of Garleton hills.

The *Third* district lies to the South of this middle district, up to the bottom of the Lammermoor hills.

The *Fourth* district comprehends these hills in so far as they are locally situated within the county.

Although the climate in the three first districts varies considerably, it is in all of them so temperate and dry, as to favour the cultivation of corn; and, even in the fourth district, rapid steps have been made, of late years, to bring a considerable part of it likewise, under the culture of the plow, by the use of lime.

The heavy falls of rain, brought from the Atlantic Ocean by the western winds, and which frequently deluge the western part of this Island, are very little known in any part of this country after the turn of the winter.

The greater part of these rainy clouds are attracted, and broken by the mountains that lye upon the ridge of the country betwixt Ayrshire and East Lothian; and the few that escape this attraction, are either attracted by the mountains that lye to the eastward of this ridge, or by the Pentland hills, lying about four miles South and West of Edinburgh, where they break and divide; part of them travel North by Arthur's Seat, and are wasted in the Frith of Forth; another division is attracted by Morphet hills, and they keep along that ridge by Soutray hill eastward.

A few, however, of these clouds, from their height, sometimes escape both attractions, and take their course by Dalkeith down the vale of Tyne and the district above it; but they are generally diverted out of this course by Garleton hills and Traprain Law; and they either take a southerly direction towards the hills of Lammermoor, or a northerly direction by North Berwick Law to the Frith of Forth.

This is the general progress of the western clouds after the turn of the season; and progressively, as the year advances,

rain with a west wind is less and less felt; and during the summer and autumn, the wind in that point is a tolerable security for dry weather.

During the winter, the wind in every point from the West, round by the North to the East, occasionally brings snow or rain.

The snow, however, does not lye for any time in the lower district; and even in the highest, they do not reckon at an average above three weeks of what they call *close weather*; that is, when the snow lyes so deep as to render it necessary to *hand feed* their flocks of sheep.

The late Sir George Suttie asserted, from long observation, that there was a period of 10 or 12 days about the middle of February, when the weather proves remarkably mild and soft, and which, he used to say, was the proper time for sowing pease and beans. Other persons, too, whose attention has been directed to the same object, confirm the truth of this observation; and a probable cause may be assigned, which seems to prove that it must generally happen.

The sun by that time has acquired a considerable degree of altitude in his return to our Northern Hemisphere*; and his light and heat are reflected back to the atmosphere by the ice and frozen snow, which for some time resist the influence of his rays.

This reflected heat, it seems natural to suppose, communicates a considerable degree of genial warmth to the air; and the heat will continue to encrease until the ice and snow begin to melt, and the warmth, of course, will be sensibly felt in those Northern countries where the vicinity of the sea has abated the severity of the winter.†

* It is somewhat singular, that in common language we should still continue to use the expression of the sun's motion, although it is now universally established that the sun is a fixed planet.

† It is established, by various authorities, that in Thibet, and the other inland countries of Asia, in latitudes comparatively (to 56) very low, but locally

The same circumstance may be assigned as the reason of the high northern latitudes being frequently distressed with cold North East winds in the spring.* As the sun advances towards the Arctic Circle, he still finds snow and ice to dissolve, so that it is generally towards the end of June, before the weather sets in steadily mild; it is even a proverbial expression, that our crops upon the clay and the strong lands seldom begin to mend until the nights are turned; that is, when the summer heat has partly commenced.

The spring in this county is generally dry, with occasional severe cold showers of hail or rain from the North East.

During the whole of May, the winds generally blow from some point to the North, with a bright sun and a dry keen penetrating air.

It is at this time that the diligent husbandman endeavours to have his fallow, particularly upon strong land, lying under a cross furrow and in lumpy clods.

The state of the atmosphere above described, so effectually dries these clods, that most of the rooted weeds inclosed in them are withered and killed.

During the summer, and in the beginning of autumn, the only rainy point in this county is from the South and East; and, in ordinary seasons, the wind generally sets in from that point at the change and the full moon, and brings from 10 to 18 hours of continued rain.

It seems hardly necessary to qualify this average account of the climate, with observing, that in so high a latitude as 56 North, it must be subject to considerable changes and variations; for example, almost the whole of the year 1792 was one continued dash of rain, excepting for a few weeks in the

highly elevated above the level of the sea, the snow lyes deep, and the frost is intensely severe. Mr Boyle, in his journey from India to Thibet, mentions, that the mornings and evenings in August were cold and frosty.

* The coldest weather at that season, in this county, is in the close of March, and in the beginning of April; and we have a monkish vulgar rhyme, stating March as borrowing three days from April, to melt all the snows upon the mountains.

months of August and September ; whereas, from the month of March 1793 to the 24th of September following, the weather was so steadily dry, that there was not 12 hours of continued rain during the whole of that period. Our pasture lands, during that time, were so dried and hard, that they felt under foot as if they had been bound up with a severe frost ; and, in general, the same quantity of pasture ground fed from a third to a half less than in the preceding summer.

Our crops of corn were from a fourth to a third less in bulk ; but they were as productive in quantity, and above 15 *per cent.* better in quality than the preceding crop.

Soil.—It belongs perhaps more properly to the Third Branch of this Report, to speak of the different species of soils in this county : suffice it, however, to observe in general, that of the three lower districts above mentioned, the western part is more inclined to a strong loam or strong clay ; advancing eastward, the soil becomes gradually more light, and ends in a rich gravelly loam.

Woods and Planting.—The author already mentioned, in describing *Laudonia*, says it is “ *nullis ferme arboribus vestita, et ignem faciunt ex lapide nigro quem ex terra effodiunt.*”

Nearly a century after this author's time, various statutory regulations were made respecting the planting of trees, which were renewed every reign, in the following century ; but they seem to have remained a dead letter ; and his description of *Laudonia* applies, with tolerable correctness, to the greater part of the county of East Lothian at this day.

Along the coast there is hardly any thing that deserves the name of planting : but the vale of Tyne, within these fifty years, has become somewhat better clothed with wood.

In the higher district of the county, adjoining to the hills of Lammermoor, there is still more planted wood, the oldest of which, upon the Tweddale estate, consisting principally of oak, is supposed to have been planted during the Usurpation of Cromwell.

There are also some woods upon that estate, which tradition says were planted about the time of the Revolution, consisting of oaks, beech, elm, ash, and Scotch fir.

The beech seems in no part of this county, nor in any other part of Scotland which I have had an opportunity of seeing, be of an older date than the period of the Revolution; but it thrives wonderfully, and where it has been allowed room and full scope to extend and spread its umbrageous top, it might vie with the *Tegmine fagi* of Virgil.

Upon the estate of General Fletcher of Salton, and of Mr Brown of Coalston, and some other estates in that district, there are copsewoods composed of the dwarf or Scotch oak, the hazzle, the birch and other indigenous trees, which evidently seem to be a remnant of that species of copse which, we are told, in early times covered the greater part of the South of Scotland. †

The only wood, properly speaking, to be found in the lower part of this county, is at Tynninghame, † which was begun to be planted about the beginning of this century by Thomas the sixth Earl of Haddington; and it grows down to the sea beach, upon a sandy light soil.

The larch has been planted in this county within these last 30 years, and is more rapid in its growth than any tree we have except the Huntington willow. But the climate of the low part of this county is in general too dry for trees, and they do not grow well, unless the bottom is low, and has a tendency to moisture.

Before leaving the subject of planting, there seems to be one clear and obvious improvement, which might be carried into effect in this county, and in many other counties both of England and of Scotland, at a trifling expence; if the landed proprietors, in place of planting barren trees around the gardens of their cottagers, would plant a few of the best bearing apple and pear trees, taking care at the same time not

D

† Coalston wood is mentioned in some of the ancient deeds of that family, so far back as the 13th century.

† *Vide* Treatise upon forest trees, by Lord Haddington.

to plant them so thick as to injure the under growth of the garden.

In favourable seasons, the setrees would produce a considerable quantity of fruit, and a cyder press for each parish, or perhaps a larger district, would suffice for the manufacturing of it; and if the cottagers were to be allowed the profit resulting from this additional wealth, it would prove a comfortable aid to that class of people.

As every person would have an interest in the fruit, it would become a general object to preserve it, and habit would soon bring it under the same protection, even in the most exposed situation, as any other crop in the field. But one individual can do nothing in this way, and it would require a general union of an extensive district, to carry it into effectual execution.

Inclosing.—Notwithstanding that the Parliament of Scotland endeavoured, by various statutes, passed in the 16th or 17th century, to encourage agriculture, and particularly the inclosing of ground, it may be truly said, with very few exceptions, that the 18th century was nearly half run before much attention was bestowed on making inclosures for the purpose of promoting agriculture. †

The first walled park* was built by the Duke of Lauderdale, in the year 1681, at Linmorelove near Haddington, for the amusement of the Duke of York.

The faithful page of history informs, that this Royal Duke paid a sudden and reluctant visit to Scotland at that period; and the tradition of this county says, that this walled park was begun and finished in the course of about 6 weeks, in order that the Royal Visitant might see a park in Scotland as he passed in the course of his progress to Edinburgh.

† I do not consider the sheep park, or the park for milk cows, which, long before this period, were to be found adjoining to the mansion house of many landed proprietors, as an exception from this observation.

* Comprehending an extent of surface something larger than a mile square, at Lethington now Lenoxlove, near Haddington,

Other noble Peers in this county soon followed this example; but Thomas the sixth Earl of Haddington, whom I have already mentioned, was the first person who begun agricultural inclosures.

This Noble Lord made his fences partly with stone and lime walls, and partly with the holly, which were originally planted upon a bank between two double ditches; and there are many stately and beautiful hedges of this plant, upon the estate of Tynninghame.

Beech Hedges.—Sometime about the year 1740, John Marquis of Tweeddale begun an extensive plan of inclosing that part of his estate, where the soil in general is a thin clay upon a tilly bottom, in the *Third* District of the county, and of a considerable elevation above the level of the sea.

The plant principally used was the beech, which succeeded wonderfully upon that barren soil, and soon became a complete fence.

Upon the death of this Marquis, which happened about 30 years ago, these hedges were allowed to run wild, and the beech having grown up to the height of forest trees, they have become open below, and the advantage as a fence has been nearly lost.

The late Mr Brown of Coalstown ‡, and his son the present Mr Brown, begun, about 25 years ago, to inclose a part of their property lying nearly in the same latitude with Lord Tweeddale's lands above mentioned, and upon a clay soil.

These fences were made partly with the thorn and beech mixed, and partly with the beech alone; but of the three the beech is by far the best fence.

These facts seem to recommend the beech to the serious attention of the landed proprietors, who have it in their view to enclose grounds of that kind of soil. ¶

‡ Who was one of our supreme judges, and is better known in Scotland by the name of Lord Coalstown.

¶ Mr Brown of Coalstown, to whom I communicated this Report in manu-

Birch Hedges.—My late father, about 30 years ago, begun inclosing and improving a piece of ground in Gladesmoor, of perhaps the most barren and inhospitable soil without exception in Great Britain.

This ground had been, for numberless centuries back, a moor set apart to supply the town of Haddington with fuel and divot; of course the ground was *fleeced*, and the soil completely carried off, and a cold tilly bottom only remained.

As the birch grew spontaneously on this piece of ground, it seemed natural to conclude, that this was the proper plant of which the fences should be made, and the birch plants were gathered from the ground, and laid for hedges in the ordinary method.

The success of this experiment was astonishing; in the course of five or six years, the birch formed an almost impenetrable fence; but they were allowed to run up to trees, before they were cut and subjected to the knife; and when this severe operation was applied to them, which was rather late in the spring, they bled excessively, and many of the plants died.

As the birch unquestionably is indigenous in Scotland, it is an object of considerable importance that this plant should be found upon trial to answer for inclosures, as it not only grows more rapidly, but will flourish upon soils and in climates where the thorn will hardly exist; and I am inclined to think,

script, sent me the following observations as to the beech hedge: “ I would
 “ by no means confine the beech hedges to grounds of an inferior quality. I
 “ am convinced it is the most beneficial hedge that can be planted in every
 “ soil; I find that it thrives best, as it naturally should, upon the best soil, and
 “ is the soonest a fence. The beech is sometimes a little shy at setting off at
 “ first; but once it sets off, it outstrips every other plant in the hedge. I do
 “ not approve of topping the beech as thorns are before planting; but after it has
 “ fairly caught in the soil, the knife may be used with great freedom in trim-
 “ ming them; one material advantage of the beech hedge is, that if it shall be
 “ kept clean for the first two years, it will afterwards completely protect it-
 “ self against weeds. While the beech hedge is kept low by the knife, the
 “ plants preserve their foilage during the whole of the winter, and until new
 “ shoots push them off in the spring; and in this way it chokes or suffocates
 “ every weed.

that if these birch hedges had been *plashed*, or entwined with each other at 4 years old, and kept about four feet high, they would have formed a substantial and a permanent fence. ‡

The thorn, however, with the exceptions I have just mentioned, has been for many years universally used in this country for making fences ; and within these twelve years, we have adopted, in some places, a new method of laying them, which seems to answer remarkably well, and therefore merits particular explanation.

We formerly used to turn up a portion of the sod from the ditch proposed to be made in the front of the hedge, and after laying that sod upon its face, the thorn was *layed* or planted upon it, at an elevation of from 4 to 6 inches above the surface of the adjoining ground, with a view, no doubt, to encourage the growth of the plant, by doubling the soil below it.

But it had been long observed, that the growth upon these thorns was in general finished by the end of June, when the dry season commonly sets in ; and it occurred, that the probable cause of this check in the growth of the plant so early in the season, was occasioned by its being *layed* so much above the surface, whereby the artificial or additional soil became not only too dry to nourish the plant, but seemed also to interrupt and attract the moisture in its progress from the lower roots, to the young shoots.

Under this impression, about 12 years ago, I took off the whole of the soil from the ground upon which the plant was to be *layed*.

The next operation was to take a small portion of the cleanest of the soil, to the thickness of about an inch, which was thrown back upon the spot it had been taken from ; and upon

E

‡ Mr Brown of Coalstown :—" I may observe on the birch hedges, that
 " I have *plashed* them with great success ; but it must be done, as you observe,
 " early in the winter, as the birch bleeds much if cut late in the season. Be-
 " fore your father *plashed* the birch hedges in Gladsemuir, he came to look at
 " one I had previously *plashed*."

this thin *stratum* the plant was *layed*; and after leaving a *scarsement* of about eight inches in the front of the plant, the ditch was cast, and the fence compleated in the ordinary method.†

The result has been, that the plant by being *layed* nearer the moisture, continued growing during the whole of the season, and was a better fence at five years old than thorns *layed* in the ordinary method at eight.

My neighbours Sir Hew Dalrymple and Mr. Cott of Old-hame, have carried the experiment still farther, by *laying* their thorns nearly two feet below the surface with great success.

As it is seldom that either the roots of the hedges, or the trees growing in a cultivated field, are cut, or even hurt by the plough; it would seem to have been the intention of nature, that the pasture for these plants should be at such a degree of depth, as not materially to interfere with the roots of the superficial plants, such as corn or grass; and it appears that the general rule for *laying* thorns is not to be fixed at a given number of inches below the surface; but that, from a comparative view of the soil and the climate, tree plant should be *layed* at that depth, where it can always command a sufficient supply of moisture, without being hurt or chilled by too much of it.

The Romans sowed their fences in a trench of about a foot and a half deep §; and the ancient Greeks planted always two feet deep ¶. It would appear that in light gravelly soils and dry climates, this rule may be usefully followed even in high latitudes. *

† Mr Brown of Coalstown observes, upon this mode of planting the hedge, “ That the year before planting his hedge, he fallows and dungs the space that is to be occupied by the ditch and hedge, and then he accumulates all the good earth about the roots of the thorn. I am not so anxious in this particular, if the hedge is to be of the beech.

§ *Vide* Pliny *de re rustica*, and Dickson's ancient husbandry

¶ *Vide* the conversation betwixt Socrates and Iscomachus in Xenophon's *Memabilia Socratis*.

* I have tried this method for the first time last autumn, *i. e.* 1793.

The late Sir George Suttie, who turned his sword into a plow-share, soon after the general peace of Aix la Chapelle, and to whom this county is indebted for several agricultural improvements, introduced a new method of making thorn hedges quickly fencible, by what he called his *stone-paling*, which was a wall of about two feet high, built immediately behind the hedge : Several gentlemen have successfully adopted this species of fence, from his example. †

Where the land is full of small stones, which must of course be gathered and carried off, this stone paling may be constructed at a small expence, by employing day-labourers and children to fill two sides of a close frame of wood, placed immediately behind the hedge with these small stones, and afterwards, by running them together with liquid mortar. An experiment upon a small scale, which was made some years ago, by Mr Rennie in Phantasy, has proved that a very firm wall can be constructed in this way.

BRANCH SECOND.

UNDER this *Second Branch*, it was proposed to give a general view of the population and the manufactures of this county, as distinct from agriculture.

The statistical accounts will give the exact number of inhabitants in every parish of this county, from actual enumeration ; it will therefore perhaps suffice to refer to that account ; and as we have hardly any other manufacture than that of

† The hill sheep are very wild, and being also accustomed to an extensive solitary pasture, it is difficult to confine them within the limits of an ordinary sized inclosure ; but the stone-paling does it effectually. Sheep only brush through a hedge ; they never leap, unless greatly alarmed.

corn in this county, the subject of this Branch of the Report will occupy a small space.

Population.—The county of East Lothian contains 24 whole parishes, and a part of two others, viz. Falla, and Cockburnspath; but the site of the church of the former is locally within the county of Edinburgh; and the site of the other is within the county of Berwick; it seems therefore highly probable, that these two parishes will be numbered in the counties within which their churches are respectively situated. But holding these two parts to be equal to one whole, the county of East Lothian may be said to consist of 25 parishes; and ever since I remember, these parishes have been taken at an average of about 1,100 souls each.

I am perfectly convinced, however, that the population of this county has increased considerably within the last 40 years. My reason for entertaining this opinion, is, that within my own memory, there were kept, even in most of the low county parishes, four or five sheep walks, with breeding stocks, where now not a sheep is to be seen, and where the ground is under the culture of the plough. This being *the fact*, according to my own knowledge, the *reasoning*, I apprehend, will not be questioned that agriculture is more favourable to population, than the practice of throwing large tracts of country into sheep walks.

Royal Burghs.—There are three Royal Burghs within this county; viz. Haddington, Dunbar, and North Berwick; of these, Haddington is the largest; and the head Burgh of the county where the Sheriff's court, and other county courts are held ||.

Trade.—Dunbar and North Berwick are both sea ports. And at the former of these places, there is a whale fishing Company, carried on under the firm of the East Lothian and Merse Whale fishing Company. The partners of this Company are mostly the landed gentlemen in the neighbourhood;

|| A weekly market, (perhaps the largest in Scotland,) is held here every Friday for the sale of corn.

who, upwards of 40 years back, have had their respective shares of subscribed stock engaged in this trade, very little to their own advantage, which sometimes happens to men who engage in a trade they do not understand.

This Company have had at times, five ships engaged in that trade; now they are reduced to two. The export trade of Dunbar is principally confined to corn, and the import to coal, wood, and iron, for the supply of the adjacent country.

There is also a manufacture of cordage and sail-cloth carried on upon a moderate scale, in this town; and there has lately been erected a machine for the spinning of lint, which promises success.

The town of North Berwick has a safe harbour, but its only trade consists in the export of corn, and the import of wood and iron.

There are, besides these burghs, fundry villages interspersed through this county; but the inhabitants are all of them either mediately or immediately connected with agriculture; such as day-labourers, black-smiths, plough-wrights, and shoe-makers, or shop-keepers, who retail grass seeds, and some of the implements of husbandry; or groceries, and such articles as are of daily consumption.

Manufactures.—In the village of Prestonpans, there is a chemical work for the manufacture of the spirit of vitriol, which was established near 40 years ago, by Messrs Roebuck and Garbet, (the founders of the Carron company in Stirlingshire,) from Birmingham.

These gentlemen, about the same time, established in this village a manufactory of white stone or crockery ware; and although both these manufactures still exist, none of the partners have been enriched by the profits resulting from them.

There is also a manufacture of marine salt carried on in this village, which, I believe, is productive, and profitable to

the persons concerned. This manufacture has been established there for several centuries back ; and, in the time of the Protectorship of Cromwell, it was taxed along with the land §.

Of late years, some distilleries, and one or two starch manufactories, have been erected in this county, which are still carried on.

It may now be proper to conclude this branch of the Report, with an historical account of the woolen manufactory in the town of Haddington, the establishment of which has been repeatedly attempted, though hitherto unsuccessfully.

The oral tradition of this county reports, that Oliver Cromwell, who passed some part of his time in it, and at Muffelburgh, in its immediate neighbourhood, did then form the plan of establishing a manufacture of coarse woolens, in the same manner as he afterwards, with more success, established the manufacture of knitted hose in the town and neighbourhood of Aberdeen.

The number of sheep producing that species of wool which is employed in this manufacture, and which were then bred not only in the mountains of Lammermoor, but also upon the high grounds in every district of the county, seems naturally to have suggested this idea to the bold, comprehensive, and enterprising mind of Cromwell ; and soon after he gained the decisive victory at Dunbar, a Philip Stampfield, who had held the rank of Colonel in his army, came down to this county, and commenced the woolen manufactory in the near neighbourhood of Haddington, under the countenance and protection of Cromwell.

It appears that Colonel Stampfield continued to carry on this manufacture after the Restoration, as we find in our

§ This fact is established by the valuation rolls of this county, made up in the year 1656, which are still extant.

statute book, that the Parliament of Scotland granted him certain immunities and privileges in the reign of Charles the Second. That Prince also conferred upon him the honour of knighthood.

But, horrible to relate ! Sir Philip Stampfield died a violent death in the year 1687, by the hands of his parricide son ¶ ; and, with him, the dying embers of this manufacture seem to have been extinguished.

As a number, however, of the commonality, during the existence of it, had been instructed in the spinning of wool, there gradually arose a manufacture, carried on by a few individuals upon a small scale, in the coarsest species of woollen cloth, or what we call *greasy webbs* ; that is, webs which they sold just as they came from the loom, to the fullers, who finished them off, and produced a cloth worth from one to two shillings per yard.

This new manufacture continued from its first commencement down to year 1750, (which, I shall endeavour to show under the *First Branch* reserved for the appendix, is a marked æra in the history of Scotland;) when most of the landed gentlemen in this county, with more patriotism than wisdom, resolved to become the manufacturers of coarse woollens, under the firm of “ The Tarred Wool Company of Haddington ;” and houses were built, utensils were purchased, and, in short, every thing necessary for carrying it on was provided.

This manufacture was carried on for a few years, and great was the expectation thereof : But, in the end, the partners reaped only disappointment, and the loss of their capital.

A few of these gentlemen, however, more enterprising than the rest of the Company, resolved to make a *second* effort to establish it ; and having purchased up the remnant of the stock on hand of the first Company ; they commenced the business upon a new stock ; but in a few years more, they retired from it with the loss of their capital and about 75 per cent.

¶ The Trial of the son is published in the State Trials.

more; and thus ended the Tarred Wool Companies of Haddington.

Whether the failure of these Companies originated in the want of skill in the managers employed and intrusted by them, or, perhaps, from the plenty and cheapness of provisions, and the favourable climate inviting to labour in the field, and which mankind in these circumstances will naturally take to, even for less wages, until necessity shall have reconciled their minds, and habit inured their constitutions, to labour and confinement within doors,—is a question that shall be left for future discussion.

These two Companies put an end to the small trade in the *greasy webbs* already mentioned; but they had hardly retired, when the trade commenced upon the same moderate scale as formerly; and there are now a few individuals in the town of Haddington who carry it on, in so far successfully as to earn out of it a comfortable livelihood to themselves and their families.

From these premises, it seems to follow, that the manufacture most congenial to the soil and the climate, to the habits and the genius of the people of this county, is that of corn; and it would seem that manufactures, like aquatic plants, thrive best in a wet climate, and in not too rich a soil.

If a retrospective view of the site of the most flourishing manufactures in England and in Scotland confirm and establish this fact, it may seem unnecessary to investigate the causes.

It will be proper, however, to observe, that the improved garden culture which is very soon created in the neighbourhood of a manufacturing town, is the consequence, not the cause of manufactures; and that the few hands employed in this species of husbandry are not withdrawn from the manufacture, but attracted by it; and that even when the increasing quantity of manure has pushed the improvement of the adjacent grounds beyond that garden culture, these improvements are regulated by a system more calculated for the convenience than for the food of the manufacturers.

If climate has any influence in forming the dispositions of mankind, and directing their pursuits, as many eminent philosophers, with some show, at least, of truth, have maintained, it would appear with submission to be a dangerous experiment, to endeavour, by artificial means, to change those habits, and those dispositions, by attempting to introduce a new and an unknown manufacture, of any kind, into a corn county.

In those counties of Scotland, where industry is as yet in a state of infancy and of nonage, it may not perhaps be difficult to plant and to raise in the vacant mind, a spirit of exertion and of enterprise, and to give to that spirit, in its infant state, a bent or turn either to manufactures or to agriculture; or, where their local situation will admit of it, to the fisheries, in which it will persevere, and, by industry, in all probability will prove successful.

The case however is widely different, with regard to those counties in which industry has already attained some degree of maturity, and where either nature or accident has given that industry a particular direction and habit.

I have been led to state more in detail than perhaps may seem necessary, the repeated and the unsuccessful attempts that, for upwards of a century past, have been made to introduce and to establish manufactures in this county; and some of these attempts, too, made at a time when, compared with the present, the spirit of industry was in a state of dull and sluggish infancy, in order to prove, by a chain of facts, the impracticability of the attempt.

It is unquestionably certain, that at present we want people to carry on agriculture in its improved and improving state; and if any new manufacture shall be brought into this county, without a new colony also to carry it on in all its branches, unconnected with our present population, a competition inevitably must arise betwixt the husbandman and the manufacturer, to the prejudice of both, as the price of labour would be raised.

ed, and in all probability the manufacturers would ere long meet the fate of the Tarred Wool Companies of Haddington.

Upon the whole, it would seem that God and nature intended there should be a person interposed as a carrier or merchant betwixt the husbandman and the manufacturer, whose business is to purchase the surplus produce of each, and to transport reciprocally the commodities of the one to the other, and thereby to supply their respective wants. Any attempt therefore, to counteract this order of nature, it may be safely presumed, would prove ultimately unsuccessful.

With these facts, and observations, I conclude the Second Branch of this Report, and proceed to the Third and the important point upon which, if I understand the matter aright, the Honourable Board desire to have the most full and accurate information.

BRANCH THIRD.

BEFORE entering in detail upon the comprehensive subject of this Branch, it may perhaps be necessary to explain some *technical* expressions that will in the sequel occur; for although these terms are well known, and perfectly understood by every person in this county, they may not be so familiar to every member of the Honourable Board of Agriculture, or to the husbandmen in other counties of the United Kingdom, who may perhaps bestow a small portion of their time in perusing the Report upon the rural Oeconomy of the county of East Lothian.

Acre.—When in the sequel the word *Acre* shall occur as applicable to the measure of ground, and intended to denote

specific extent of surface, the acre *Scotch measure* is meant, because it is by that measure the grounds in this county are let.

The relative proportion betwixt this acre and the acre, English measure, we hold in round numbers to be as four is to five; but it is believed the nearest integral proportion is as eleven is to fourteen.

Measures of Corn.—In the reigns of James the Fifth and Sixth *, the Parliament of Scotland appear, from our statute book, to have bestowed a considerable degree of attention on the important object of adjusting and regulating the weights and measures, by which the internal commerce of Scotland was to be governed.

From these statutes, we learn, that for a time beyond the period of record, the city of *Edinburgh* had been entrusted with the custody of the measure of length, called the *Eln*: That the town of *Lanark* had been intrusted with the custody of the measure of *weight* called the *French Troy's* pound §; and that the town of *Stirling* had the charge of *Liquid measure*, called the *Stirling Jug*, all of which still exist, and in general in good preservation. In the year 1587, a committee of Parliament was appointed to examine into the *mettes measures*, and *wetches*, for the purpose of adjusting one general rule for the government of trade in future.

This committee, having examined the several ancient weights and measures, do report, That they found, “ That maist
“ wisely the proportions and grounds of their weghtes, metts
“ and measures, hes bene sa establisshed of auld, that everie
“ ane of them comptrolles otheres, and, be just conference,
“ makis and establisshes ane certaine measure and weght.”

The ingenuity of our forefathers, by which they contrived to make the measures of length, and the measures of content

* *Annis* 1503, 1587-8, 1617-8.

§ M'Kenzie, in his observations, says, that the pound weight was lodged at Lanark, because there the King received the free duties payable to him in wool. *Land area, inde* Lanark.

and of weight, *by just conference*, to check and regulate each other, seems justly to merit some degree of praise.

This Parliament fixed the size of the measure for corn, by so many inches deep, and so many wide; to check this, they ordered, that it should contain so many fills of the Stirling jug, of the clear running water of the river of Leith, weighing so many pounds and ounces Troy's weight.

It would seem, however, that these regulations were not observed; and in the year 1617, a new commission of Parliament was appointed to inquire into that matter.

This committee, upon farther inquiry, found that the burgh of *Linlithgow* was possessed of a very ancient *firlot* or measure for corn, and certain *jedges* and *warrants* to regulate and check the size of that firlot; and that they had been in use to give out to the leiges measures for corn, so constructed for fifty or threescore years back.

This committee did therefore assume the ancient firlot of Linlithgow as the basis of their proceedings, and they ascertained its content in the following manner.

Upon the 21st January 1618, they convened at Edinburgh, and having the measure of Linlithgow, the Stirling jug, and the French Troy's pound of Lanark before them, they proceeded to the river of Leith, and having filled the Linlithgow firlot with the clear running water of that river; they found, that it contained *twenty one pints and one mutchkine* (*i. e.* $\frac{1}{4}$ of the pint) of the *just Stirling jugg and measure*; and after having weighed the water contained in that jugg, they found it weighed 3 pounds 7 ounces of French Troy's weight. They further reported, That by the usage of the country, wheat, rye, beans, pease, meal, and white salt, were sold by *straicked measure*, at the rate of four Linlithgow firlots to the boll; and that malt, barley, and oats, were in use to be sold by *heaped measure*; and that in the sale of these three species last mentioned, it had been customary, in place of two heaped firlots, to give three *straicked* ones. But having tried this proportion, they found it

erroneous, and they reported, That a new firloot should be made for these species of corn, and that this firloot should contain exactly 31 pints or fills of the Stirling jugg, of the weight aforesaid.

This Report was passed into a law in 1618, and since that time, corn has been bought and sold conform to these two measures; viz. wheat, rye, beans, and pease, by the small firloot; and malt, barley, and oats, by the larger one.

Meal has been sold by weight at the rate of eight stone Dutch to the boll, for a long period back.

The reverence and attention our forefathers showed by these statutes to ancient usage, do some credit to their knowledge in the first principles of legislation; and, on every supposition, are a sufficient apology for their making a difference in the content of the two firlots.

The abstract size of a measure for corn, or for any other commodity, is a matter of no importance in itself, provided it shall be defined and fixed, so as the buyer and seller can know, with absolute certainty, that the one gives and the other receives, by a measure containing a specific *cubic content*. The denomination of this measure, whether bushel or firloot, is equally immaterial *.

The treaty of Union, which happily incorporated the two nations into one, stipulated, that "from and after this Union, the weights and measures should be of one denomination over the whole of the United Kingdom:" And it farther stipulated, with regard to corn, that the Winchester bushel was in future

H

* Almost every county in Scotland, with the exception of the three Lothians, and perhaps one or two more, has a separate measure, which, in general, is several *per cents* higher than the Linlithgow measure, and the number of *per cents* vary from three to seven, or perhaps a little higher. I am inclined to think, that this difference has been settled in old times by a fixed rule, in the *ratio* of the quality of the corn of each county, so as to enable a purchaser of a boll of corn, in any one county, to conclude, with tolerable certainty, that the measure was so adjusted, that whether it were great or small, he purchased the same quantity of animal food. In this county, even at this

to be the measure used: For that purpose, a Winchester bushel, made of brass, and marked, (*Anne*, 1707,) was sent from the Tower of London to the head burgh, it is believed, of every county in Scotland. The one sent to the town of Haddington is in high preservation, although perhaps these measures may have been destroyed in other burghs in *odium* of the Union, which, at that time, was held in very general detestation in Scotland.

This branch of the treaty of Union has long gone into disuse in Scotland, or, to speak more properly, never was adopted. Indeed it was utterly impossible; because neither that treaty, nor any subsequent British statute, ever settled the difference betwixt the Linlithgow firloft and the Winchester bushel, in such a manner, as that the landlord and tenant should reciprocally know how many Winchester bushels the one was to receive and the other to pay, in place of so many bolls Linlithgow measure, which the covenant of lease betwixt them had established as the rent.

In like manner, the stipends or salaries of the clergy in Scotland being paid mostly in corn, such disputes must have arisen with them, without a statutory regulation, fixing the exact proportion betwixt the two measures.

Even if this had been done, the change of measures would have created a prodigious shock in the country: Every ancient measure must have been destroyed,—new measures must have been provided,—and men must have unlearned every thing they had been taught, or had practised for numbers of years, and must have returned to learn a new and perhaps complicated system of measures.

Some years ago, a dispute arose respecting the measures for corn, that regulated the market of Haddington in that respect.

day, when we speak of meal for oats, we mean that a boll of oats Linlithgow measure gives a boll of meal weighing 8 stons Dutch. But in other places, when speaking of meal for oats, they mean *five* firlofts of oats as equal to a boll of meal.

It seems unnecessary here to detail the whole cause of the dispute ; suffice it to observe, that the justices of the peace for this county, felt themselves called upon to take the matter under their serious consideration, in order to settle the controversy, and, as far as possible, to prevent the like occurring in time to come.

With this view, they first procured a wheat firlo and a barley firlo, constructed upon mathematical principles, containing each the exact specific numbers of the fills of the Stirling jagg of the clear running water of the river of Leith, of the weight specified in the statute above mentioned ‡.

In the next place, following the example of their predecessors, in the 16th and 17th centuries, they endeavoured, as nearly as possible, to find the content of the ancient customary measures, that had for time immemorial regulated the market of Haddington, in peace and in quietness.

These facts being ascertained, they next proceeded to compare the ancient customary measures with the statute measures.

The statute wheat firlo contains exactly 340 gills liquid measure ; and they found the customary wheat firlo of Haddington contained 3 gills more, which is something less than one per cent.

The statute barley firlo contains exactly 496 gills, and the customary barley firlo of Haddington was found to contain 6 gills more, which is about $1\frac{1}{2}$ per cent.

‡ These measures are made of copper, and were constructed by Mr John Robinson, professor of Natural Philosophy in the University of Edinburgh, with the most correct and mathematical exactness. Mr Robinson is perfectly equal to this task : He made his first experiment upon the same day of the month that is mentioned in the statute ; and, by repeated experiments with the thermometer, he ascertained the exact degree of heat in the atmosphere, when the fill of the Stirling jagg gave the exact weight of the Troy's pound, denominated in the statute. The construction of these measures is so simple, that *any person* can adjust a firlo by either of them, in the course of a few minutes, merely by bringing the firlo to be adjusted to an exact level, by means of screws fixed for the purpose in the board upon which the firlo is to be placed.

The Justices, upon farther inquiry of the most experienced corn dealers, were informed, that the additional content of these respective customary measures was just sufficient to make this boll of Haddington measure, give the statute or Linlithgow boll at Edinburgh, after being carried there over land. Now as Edinburgh has ever been the great market of consumption for the produce of this county; and as the Edinburgh firloft is the exact statute measure, it seems highly probable that the small difference above mentioned had been added *ex proposito* to the measure of Haddington, (when first constructed,) in order to make the Haddington boll produce a full boll at Edinburgh,—which would not have been the case, if the two measures had been exactly of the same content.

Proceeding upon this ground, the Justices declared, much to the satisfaction of all concerned, that these ancient customary measures should remain, in all time coming, the rule for governing the corn market of Haddington ||.

Measures of Weight.—Notwithstanding that the Scotch statutes above mentioned, do positively enact, that the Troy pound, consisting of sixteen ounces, and the stone of sixteen pounds, was in future to be the sole measure of weight used throughout all Scotland, we have two different measures of weight in this county, neither of which correspond with these statutory enactments, viz. The Tron and the Dutch weight:

The *Tron* weight consists of 22 ounces Averdupois to the pound, and 16 pounds to the stone; butter, wool, hay, tal-

|| Since writing the above account of our measures of content, I applied to my friend Professor Robinson above mentioned, who has furnished me with the following compared view of the weights and measures used in England with ours.

“ The statute pound of Scotland, by act 1618, and called the *Lanark Trois*,
 “ contains 7618, or 7620 English *Troy* grains, and it is equal to one pound one
 “ ounce and one-4th. of an ounce, and 69 grains *Averdupois* or *English* weight.
 “ The

low, hydes, and cheefe, when fold in gros by the husbandman, are weighed by this weight.

The *Dutch* or *Amsterdam* weight consists of $17\frac{1}{2}$ ounces to the pound, and 16 pounds to the stone. Butcher meat, oatmeal, &c. are sold by this weight, and indeed it is the general retail weight of the county; although this rule admits of some exceptions, particularly with regard to bread, which, since the late statutory assize, is sold by the English or *Averdupois* weight.

Fiar Prices.—For time immemorial, and probably prior to the period of record, it has been the customary practice of this county, and of some other counties in Scotland, annually to fix, by public authority, *fiar* or average prices of each species of corn sold and purchased, and delivered within the county for ready money.

In this county, we have only four species of corn, of which the *fiar* prices are annually struck, viz. wheat, barley, oats, and pease, because formerly these four species formed the staple produce of the county; and although we now produce a considerable quantity of beans, we have not as yet struck the *fiar* prices of that species of corn.

I

- " The Stirling *pint* or *jug*, contains 103 and a half cubic inches very nearly.
- " The wheat firloot contains 21 *pints* one *mutchkine*, i. e. one fourth of the pint,
- " or 2199 cubic inches.
- " The bear firloot contains 31 *pints*, or 3208 cubic inches.
- " I believe the contents of the firloots in Lord Swinton's book, are, viz, the
- " wheat firloot, 2196, and the bear firloot, 3203 cubic inches.
- " An English wine quart contains 115 and a half cubic inches.
- " An ale quart - 131 ditto ditto.
- " A corn quart - 134 and a half ditto ditto.
- " A Winchester bushel 2150 and a half ditto ditto.
- " So that our wheat firloot contains near a chopin, i. e. half the Stirling pint
- " more than the Winchester bushel; 177 firloots are exactly 181 bushels; 44 fir-
- " lots are very nearly 45 bushels; or a firloot is very nearly 2 fourths *per cent.*
- " better than a Winchester bushel; or, counting it in money, it is 2 l. 5s. 3d.
- " farthing for 100l. This gives the value under as many points of view as
- " I think can be useful.—Another way.—For every pound add five pence far-
- " thing.

Several years ago, some corn dealers in Glasgow had purchased a considerable quantity of corn in this county by the fair prices, but after these fairs were struck, they refused payment, alledging that the mode adopted by the Sheriff in striking them, was improper and unjust.

This question came to be tried at law before the Supreme Civil Court of Scotland, and the Glasgow corn dealers were non-suited.

The immemorial usage followed by the Sheriff, in striking these fairs, as explained in that law suit, stands thus :

The Sheriff, sometime in the month of February, calls before him a considerable number of respectable tenants, and extensive dealers in corn, who have sold and purchased corn for ready money, and delivered and received it within the county.

The proof applies mostly to the corns that have been sold and bought in the market of Haddington, from the time the preceding crop came first into market, down to the day on which the proof is taken.

The price of considerable quantities of each of these four species that have been bought and sold in this manner is proved.

The Sheriff then strikes one general average out of the total mass of prices, for each species ; *2dly*, he finds the quantity or number of bolls that have fetched a price higher than this general average, and he strikes a second average of this quantity ; *lastly*, he finds the quantity that has been sold at a price below his first general average ; and he strikes a *third* average also of this quantity.

To each of these averages he adds $2\frac{1}{2}$ *per cent* ; and these three averages, with that addition, form the first, the second, and the third fair prices for the year.

The record of these fair prices in this county goes back to the year 1627 ; an extract from that record shall be laid before the Honourable Board along with this Report, which may be annexed to it.

The addition of the $2\frac{1}{2}$ *per cent* to these averages, is founded upon immemorial usage ; and as the merchants have of late complained of it, I have endeavoured to investigate the probable cause of its being at first introduced, which I beg leave shortly to lay before the Honourable Board.

Upon looking into the above mentioned extract, it will be found, that from 1627 down to the 1647, the fiars were struck only once in the year ; and as the record is silent as to the date, for the first 13 years, it is impossible now to say at what period of the year these fiars were struck ; but in the year 1648, the record shows, that fiars were struck twice for that year, viz. at the Candlemas and the Lambmas.

In the following year 1649, the fiars were struck only once ; but in the 1650, and for every year down to the 1675 inclusive, with the exception of the year 1665, the fiars were struck twice, viz. at the Candlemas and at the Lambmas ; and again, in the year 1676, the fiars were struck only once, viz. at the Candlemas ; and this practice has continued uniformly down to the present time.

It seems highly probable, that the $2\frac{1}{2}$ *per cent*, was first added to the Candlemas fiars for the year 1676, and was continued to be added to the fiars for every year from that period downwards.

Upon examining the fiars for the 26 years, during which they were struck at the Candlemas, and at the Lambmas ; and taking the average of both, which seems to be the fair *medium* price, it turns out, in point of fact, that the Candlemas, with the addition of $2\frac{1}{2}$ *per cent*, is somewhat below the above *medium* of the double fiars.

The method I have adopted to establish this fact stands thus :

I first collected into one aggregate sum the highest Candlemas fiars for each of the four species of grain, for the whole period of the 26 years ; 2^{dly}, I followed the same rule with the highest Lambmas fiars for each of these species ; 3^{dly}, I added them together, and, by halving that sum, I found the *medium* ; and, lastly, I added the $2\frac{1}{2}$ *per cent* to the Candlemas.

fiars ; and if my figures shall be found correct, the result will stand as follows :

WHEAT.

	£.	s.	d.		£.	s.	d.
Candlemas Fiars	19	12	6	Lambmas Fiars	21	0	8 $\frac{8}{12}$
					19	12	6
Add 2 $\frac{1}{2}$ per cent.	0	9	9 $\frac{9}{12}$				
The aggregate of the Fiars by the				Total	40	13	1 $\frac{1}{2}$
present rule -	20	2	3 $\frac{9}{12}$	By the medium	20	6	7 $\frac{4}{12}$

BARLEY.

	£.	s.	d.		£.	s.	d.
Candlemas Fiars	16	13	8 $\frac{4}{12}$	Lambmas Fiars	18	12	2
					16	13	8 $\frac{4}{12}$
Add 2 $\frac{1}{2}$ per cent.	0	8	4 $\frac{3}{12}$				
The aggregate of the Fiars by the				Total	35	5	10 $\frac{4}{12}$
present rule -	17	2	0 $\frac{7}{12}$	By the medium	17	13	11 $\frac{2}{12}$

OATS.

	£.	s.	d.		£.	s.	d.
Candlemas Fiars	12	0	3	Lambmas Fiars	14	13	7 $\frac{4}{12}$
					12	0	3
Add 2 $\frac{1}{2}$ per cent.	0	6	0 $\frac{2}{12}$				
The aggregate of the Fiars by the				Total	26	13	10 $\frac{4}{12}$
present rule -	12	6	3 $\frac{1}{12}$	By the medium	13	6	11 $\frac{2}{12}$

PEASE.

	£.	s.	d.		£.	s.	d.
Candlemas Fiars	12	3	5 $\frac{4}{12}$	Lambmas Fiars	14	10	8
					12	3	5 $\frac{4}{12}$
Add 2 $\frac{1}{2}$ per cent.	0	6	1 $\frac{1}{12}$				
The aggregate by				Total	26	14	1 $\frac{4}{12}$
the present rule	12	9	6 $\frac{5}{12}$	By the medium	13	7	0 $\frac{10}{12}$

A period of twenty six years seems of sufficient duration to ascertain a proportion of this nature ; and as the addition of the $2\frac{1}{2}$ per cent. to the Candlemas fiars of the wheat, in particular, brings these fiars to near the *medium* of the double fiars ; it seems perfectly evident, that the addition of the $2\frac{1}{2}$ per cent. has been adopted upon that principle, and at that period.

2dly, Candlemas or February appears obviously too early a period, for fixing a just average price for the whole year.

In high latitudes, where the influence of the autumnal sun must necessarily be feeble, and where the climate is precarious and uncertain, the husbandman dare not venture to leave his corns standing in the field, after being reaped, for such a length of time as, under these circumstances, must be necessary, completely to dry the corn ; in fact, all he studies, is, to catch it, at that degree of dryness in which it may be trusted with safety in the stack, without the danger of heating.

The necessary consequence resulting from this mode of treatment is, that the corn must be damp, and not in proper order, until nearly about the new year, or perhaps later, and, upon that account, it must fetch a lower price in the market.

It is a fact, also, that corn of equal quality, if sold when new threshed in March, will fetch a higher price at that time, than if it had been threshed and sold a month sooner in the season.

From these premises, it seems to follow, that Whitfunday would be a more proper period for striking the average price for the year, than Candlemas. The mode adopted by our forefathers amounts exactly to the same thing, viz. the taking a medium betwixt the Candlemas and Lambmas prices ; experience having proved, that $2\frac{1}{2}$ per cent being added to the Candlemas fiars, gave nearly that average with a balance in favour of the purchaser of the corn, it seems a safe conclusion, that the addition of the $2\frac{1}{2}$ per cent commenced just where the Lambmas fiars stopt ; or, in other words, with the year 1676.

It will be observed, that the Candlemas fiars of wheat, with the addition of $2\frac{1}{2}$ *per cent.* approach much nearer to the average of the double fiars, than the Candlemas fiars of the other species do to their respective averages; and also, that for several of those years, during this period of experiment, the Lambmas fiars of wheat were considerably lower than the fiars that had been struck at the Candlemas preceding.

At this period, however, bread made of wheat was a luxury, not a necessary of life, which our frugal ancestors, almost without exception, could deny to themselves, when it rose in price beyond the due proportion to the price of the other species of corn; and accordingly, in these years, pease and oats were generally low ‡; but this would not be the case now; for even the lowest people in the towns in the south of Scotland eat only wheat bread, and it would be difficult to condescend upon one year, in which the Lambmas price has been lower than the Candlemas price; and an extraordinary importation, during the summer, which has happened twice in my time, could alone produce this effect.

If the Lambmas fiars of wheat were now to be struck, I mean, if that practice had continued, and the *medium* of both taken, that *medium*, for the last 26 years, would have been, at the lowest, 3 *per cent.* higher than the Candlemas fiars, with the $2\frac{1}{2}$ *per cent* added to them.

In short, since wheat has become, in more than the one half of Scotland, a necessary of life, the *medium* of the double fiars in that species of corn, would greatly exceed the Candlemas fiars, even with the $2\frac{1}{2}$ added to them; and the fact is, that, *communibus annis*, the prices of every species of corn rise some *per cents* above the fiars, within a month after they have been published.

‡ My grandfather, who was born in 1681, has often told me, that in the beginning of this century, oat bread, and wheat bread, were presented in the same basket, even at the entertainments given by people of fashion, in the town of Edinburgh.

Terms of Removing and Entering to Farms.—At the term of Whitsunday, or 25th of May, the out going tenant removes from the grafs grounds, and from the dwelling houses, and all the office houses, (the barns excepted.)

The crop then upon the ground belongs to him; and he cedes the possession of the arable lands to his successor, progressively as he separates the crop from the ground; but he retains the possession of the barns down to the Whitsunday following, for the purpose of threshing out his last crop.

Steelbow.—I cannot pretend to say from what language this word is derived, but it means the straw and the chaff, and in short, every particular of a crop of corn that comes under the denomination of *fodder*, or food for cattle; and when the landlord reserves to himself the fodder of the last crop reaped by the out-going tenant, it is called *Steelbow*.

As the outgoing tenant removed at the Whitsunday previous to the reaping of his last crop, he can have no stock upon the farm to consume the straw or fodder of this crop; and, upon that account, it is a general practice in this county, for the landlord to stipulate in his lease, that the straw of this crop shall remain upon the ground, and shall be delivered to the incoming tenant progressively as the corns are threshed.

This covenant is thus expressed in the lease. “*That the whole straw, chaff and chaffing, shall be steelbow* †.

We have certain customary rules which regulate the mode the outgoing tenant must thresh his corns, for the proper accommodation of his successor, in the feeding of his cattle.

Having thus explained the technical terms, and the ancient usages that seem peculiar to this county, I shall now pro-

† Under the 1st branch of the Appendix, I shall endeavour to prove, that anciently in Scotland, as among the Romans, the whole stock and agricultural instruments upon a farm were steelbow; and that the tenant, like the *Colonus partarius* of the Romans, rented the stock as well as the land from the proprietor. Some instances of this practice could be mentioned to have existed within these 50 years.

ceed to give an account of our ancient and modern practice of husbandry, and of the several improvements that have been made in that art progressively as they have been introduced.

Agriculture.—Some of the later Roman rustic writers § speak of the agriculture in the southern part of this island, in the language of commendation ; and I am inclined to think, that the Roman province in Britain, or what they called *Britania Romana*, was in a state of more general, and perhaps higher cultivation, than it ever has been at any period since that time.

But, without entering upon this argument, suffice it to observe, that the Romans certainly considered Britain as a corn province, upon which Rome and Italy depended, in cases of necessity, for a regular supply.

Although none of these writers take the smallest notice of the Roman agriculture so far North as this county, I am inclined, notwithstanding, to be of opinion, that this wonderful nest of plunderers, who carried the arts of civilized life into every vanquished country, were our great masters in agriculture ; and that, during the short time they possessed this northern part of the island, they taught the rude and ignorant natives to manage the plow, and to manure their lands with *lime*, that most extensively useful, artificial manure, hitherto discovered, for the rapid improvement of uncultivated grounds.

Lime, and calcareous earth, probably chalk, were certainly used as a manure in the South of England in the time of the Emperor Trajan : And Pliny, who wrote in his time, mentions, that this species of manure produced great crops for a period of no less than 80 years ; and he has given a distinct account of the mode of applying quick lime, which he calls *mordacissimum*, and chalk, and the different species of marle ; and as it was in this reign, that the Roman General Agricola,

§ Columella, Pliny.

carried his victorious arms to the foot of the Grampian mountains, it seems by no means improbable, while this county continued in their possession, under the protection of the wall of Severus, that the use of lime, as a manure, was then introduced, particularly upon the low lands along the coast of this county, which in general are of that species of soil the Romans delighted in, and were most desirous of cultivating. These soils they divided into three distinct species; viz. *terra tenera*, a free and light soil; *terra pulla*, a lighter, and softer black mould than the former; and *putre solum*, a light gravelly soil, with a small mixture of clay marle.

The lands about Seton and Longniddry are of the first species:—The lands about Dirleton and North Berwick, belong to the second class:—And the low lands in the parish of Innerwick, are of the third description.

2dly, If a similarity of system, and of various usages in agriculture, in the two nations, shall be admitted as evidence, to prove, that the civilized and conquering nation were the teachers of the ignorant and barbarous people they had vanquished, the proof of this proposition will be complete.

The more ancient system of the Romans, and many of their customs, as distinctly traced and explained by Cato, correspond in the most essential particulars, with the ancient practice in this county.

A few instances of this similarity shall be given, and many more will be found detailed in Dickson's ancient husbandry.

Whoever has read with attention the authors quoted in that work, must have discovered how minutely accurate and attentive the Roman husbandmen were in studying the crops that were suited to the several different species of soil; and that *hordeum et triticum*, that is, wheat and barley, were the crops they particularly recommended upon the three species of soil above mentioned: We may from thence conclude, that if wheat and barley were unknown in this county prior to the time of the

Romans, they were at least then introduced upon grounds of the above description.

At any rate, I speak from the authority of record, when I state, that wheat was certainly a regular crop in this county, and used as bread in the 12th century ‡.

Towards the close of that century †, Adda*, the mother of William, surnamed the Lyon, King of Scotland, founded a monastery of Nuns, at a place in this county still called the Abbay, near the town of Haddington; which she endowed with the rents of certain lands lying in the neighbourhood; these rents, according to the custom of the times, were payable mostly in kind, that is, in corn; and she distributed this corn among the Nuns, to each of whom she gave a regular yearly allowance, as follows: 4 bolls of wheat, and three bolls oat meal; and for flesh and fish, each of them for every day in the year, eight shillings; and for cloths in the year, 4 l. ||

Ancient Husbandry.—One of the ancient usages, which we copied from the earlier agricultural practice of the Romans, was the following division of our lands, into *in-field*, *out-field*, and *common pasturage*. This division exists in the greater part of Scotland at this day.

‡ The *Regiam Majestatem*, which is the oldest book in the law of Scotland, and supposed to be of higher antiquity than the 12th century, (it contains internal evidence of this fact, *vide* c. 56. and 127. *Leges Burgorum*.) mentions *albes Panes*, i. e. *white bread*, or bread made of the flour of wheat, *ibid* c. 61.

† Anno 1178.

* This religious lady gave rise to the proverbial expression in Scotland of "*the grace drink*," from the following circumstance. She promised the restless and impatient nobles of Scotland, who had the honour of dining at the royal table, if they would not run away individually, as each had finished his repast, but would stay till dinner was over, and hear a grace said, that she would give them an additional drink. This proverbial expression, often since that time, has been used in a sense very different from the pious purpose for which it was introduced.

|| *Vide* Doctor Barclay's account of the parish of Haddington, in the *Transactions of the Royal Society of Antiquaries of Scotland*, Vol. I.

The in-field in this county was divided into four brakes, or what we vulgarly call *shots*, under the following rotation of crops; viz. one fourth was dunged for pease, that is, the whole dung made upon the farm was laid upon this brake: The *second* crop was wheat, the *third* barley, and the *fourth* oats; and then the same rotation recommenced.

It is within the memory of many people now living, when this rotation was in strict observance, particularly upon the strong lands.

My neighbour, Sir David Kinloch, has leases in his possession, of no very ancient date, which stipulate the preservation and regular dunging of the *mucked land shots*; and last summer, (1793,) a person, now a farmer in the county of Fife, of about 70 years of age, who had been in the service of my uncle and immediate predecessor in the estate of Smeaton, pointed out to me the boundaries of the four *mucked land shots*, upon the farm which he kept in his own hands; he carried me also to the particular spot (about half an acre of ground only,) where the first broad clover had been sowed upon that farm.

Such was the general state of agriculture in the end of the last and in the earlier part of this century: It was not till about the year 1750, that the gentlemen and tenantry of this county began to emancipate themselves from the fetters of ancient usage, and to think and to act upon their own judgment.

The *out field* was divided into five, six, or seven brakes; and this also was a practice among the ancient Romans.

The number of brakes depended in a great measure upon the quality of the soil, as will appear from the rotation of crops.

Three of these were cropped with oats, and the remainder were left in what we call *ley*, that is, in pasture, consisting of the spontaneous growth of grass, without any artificial grasses being sown upon them, until about the year 1750, when a few, not exceeding four or five of the most judicious husband-

men, sometimes sprinkled their out-fields with a little rye-grass; as in the sequel shall be more particularly noticed.

This out-field pasture was kept for the live stock upon the farm, which during the summer were folded, or what we call *toathed*, upon the brake that was next in rotation for being broke up.

The moor, or common pasturage, was treated still more harshly.

Sometimes this moor was *common* to several conterminous estates, and sometimes it was *common* to the tenants only of one estate. But, in either case, it was termed *common*, from the promiscuous uses to which it was put.

These uses were threefold; 1st, Pasture for the yeld stock, and a few unfortunate sheep: 2^{dly}, For *feal*, which was applied sometimes in the building of houses; and sometimes thrown into the dunghill, and mixed up with dung for manure, as directed by the more early Roman rustic writers: *Lastly*, For *divot*, that is, when the skin or surface was pared off thinly, and used for roofing houses.

Almost all these commons, in the low parts of the county, have been divided among the several proprietors formerly entitled to the promiscuous use of them, within these 30 years, under the authority of our statute 1696, which fixed certain rules for dividing commonities.

Fallow.—The *fallowing* of grounds, although of some antiquity in this county, was confined, till within these 40 years, to a very narrow district.

The traditional account of its first introduction is two fold; One account says, that Thomas, the 6th Earl of Haddington, who has been mentioned in a former branch of this Report, was the first husbandman who began fallowing grounds in this county: another, which carries it back also to about the beginning of the present century, stands thus:

John Walker, then tenant in Beanstown †, and the grandfather of the present tenant in that farm, and who kept an inn upon the great post road from London to Edinburgh, was advised by an English traveller, who had lodged a night in his house, to try the effect of fallow; which he did at first upon six acres; and finding the crop he obtained after it very productive, he fallowed more than 20 acres in a subsequent year; and he continued the practice, in which a few of his neighbours gradually, but slowly, followed his example.

Sir David Kinloch, whose estate marches with Walker's farm, confirms this account; and he says that his father, the late Sir Francis Kinloch, advised the family of Walker to record it upon his tomb-stone after his death *.

Hollow Draining.—Patrick, the former Lord Elibank, and the late Sir Hew Dalrymple of North Berwick, did each of them contend for the merit of being the first who introduced the mode of draining ground, by *under* or *hollow* drains; which, in high latitudes, and of course in cold, and generally moist climates, is the first and most essential of all improvements; as the stagnated or superfluous water upon any species of soil, but particularly upon strong lands, does in a great measure counteract all the industry and labour of the husbandman.

In the sequel, this proposition shall be more fully illustrated.

Straighting of Ridges.—Anciently almost every ridge in this county was from 18 to 22 feet broad, and sometimes more;

M

† About 3 miles N. N. East of Haddington.

* I am satisfied both accounts are true; but, from the information of an old and a well informed tenant, who still lives, I am inclined to believe, that Lord Haddington has the merit of being the first who showed this county the example of fallowing grounds: He was educated partly in England, which naturally led him into an early acquaintance with this practice.

they had curves at each end, somewhat in the form of the letter S; and these ridges were always twice, and upon strong lands, generally three times gathered from the level of the ground.

This shape of the ridge was universal in Scotland; and I am inclined to think, we learned it from the Romans; although, I must confess, I do not recollect any passage in the rustic writers of that nation, to support this conjecture: But it seems obviously calculated to retain moisture, which certainly is an object of great importance to the husbandman in low and warm latitudes.

About the year 1723, John and Alexander Cunninghams, tenants in White Kirk, were the first husbandmen who began to level the high gathered ridges; and I have been informed, that, at a later period, they also were the first who began to straighten ridges: the neighbouring husbandmen at first derided the practice; but the increased fertility of the soil, and consequent super-abundant crops, soon proved the advantages resulting from this improvement, which made its way more quickly through the whole of the county than any other that has been introduced into it.

The advantage of being able to cross plow, (which was the necessary consequence of levelling and straightening the ridges,) for the cleaning of the ground, and the benefit resulting from having a clear and straight furrow, to run off the superfluous moisture in wet weather, struck every man so forcibly the instant he saw it, that the ridges in almost every corn field were straightened progressively as it came in its rotation to be fallowed.

Broad Clover and Rye Grass.—We know, with absolute certainty, that Thomas, the 6th Earl of Haddington, was the first person who sowed broad clover and rye grass in this county.

The treatise he wrote upon forest trees, and other branches of rural oeconomy, addressed to his grandson, the present

Earl of Haddington †, contains very just directions for the raising of broad clover ; and, what is still more extraordinary, this Noble Lord states the mode he practised in sowing and winnowing the seed of that plant, which, since that time, never has been attempted in this county.

The mode was, to cut the first crop about the end of May, old style, now about the second week of June ; “ and I commonly kept the second crop for seed, which will be ripe in a month after it is full in the flower, and by threshing, cleansing the seed, and a certain way of putting it through the mill, the seed is got out clean from the husk, and is made fit for sowing ‡.”

In ancient times, and prior to the introduction of artificial grasses for winter food, I am inclined to be of the opinion, that the people of Scotland used the furze or whin, and the broom, for this purpose.

Of these, the furze was the first that was adopted, and goes beyond the period of record, in every county in Scotland, Galloway excepted : But Mr M'Dowal the elder, now of Logan in that county, informed me, many years ago, that his grandfather brought the first seed of the furze ever sowed in Galloway from France, when he returned from his travels, and which he sowed upon the estate of Logan. The furze soon spread over the greater part of that county, which being then a breeding county, was reckoned a very great improvement, as it grew to a considerable height, and the cattle browsed under it ; and in the winter it afforded them both food and shelter.

About 40 years ago, John, the late Earl of Stair, introduced the improved culture by the plough, into that county, and the rooting out of the whins has cost from 40s. to 3l. per acre. This plant, although an evergreen, certainly is not a

† Dated at Tynningham, December 1733, and published at Edinburgh in 1761.

‡ Treatise upon Forest Trees.

native of so high a latitude as 56° . North. It does not grow in our high grounds, and it cannot resist a remarkably severe frost. The long and hard winter in the year 1740, killed, as my father has informed me, the greatest part of the whins in this county.

As to the sowing of broom, our statute book, in the 15th and 16th centuries, is replete with various statutory enactments for the sowing of broom, under severe penalties: It is there generally called *the hainings of broom*, that is, the fields that were sowed or protected for winter pasture.

It has been already mentioned, that it was not till about the year 1740, that my immediate predecessor began sowing broad clover, although he lived within a mile and a half of the farm upon which the Earl of Haddington continued to sow broad clover as long as he lived; and I incline to be of opinion, that any feeble attempts that might have been made to follow this example, must have turned out indifferently, because where the ground never had been fallowed, the quantity of indigenous plants that must have been produced and propagated every year upon that ground, would either totally destroy the clover, which is a delicate plant, or render it a very indifferent crop.

Another reason may be assigned for clover not having been generally sowed, or introduced as a regular crop at that early period; viz. that very few people, either among the proprietors or the tenants, had any idea of laying out much money upon the improvement of ground; and few people would follow an improvement which required an annual expence for seed, especially, as I have been informed, that it was at that time nearly double the price it is at present.

The same objection that operated against the introduction of broad clover, at that early period, did not apply to rye-grass, for the seed of it is easily sowed, and consequently the sowing of rye-grass required only one expence in the purchase of the first seed; and accordingly, a few of the most judicious husbandmen, following the example of Lord Haddington, soon

got into the practice of sowing a little rye-grass on their outfields with the last crop §.

Turnip Husbandry.—The same noble Lord I have already mentioned, attempted also turnip husbandry upon his farm at Tynningham; and although the soil of that farm is remarkably adapted to the culture of turnips, I do not find that it was long persisted in.

The next person who sowed turnip in this county was John the former Marquis of Tweeddale, who brought from Eng-

N

§ I beg leave here to mention a curious fact, upon the authority of Sir David Kinloch, to give some idea of the state of agriculture and pasture, and of the consumption of the produce of the ground at that early period. Sir David, who, at the age of 84, enjoys good health, and is in the full possession of all his faculties, informs, that early in the spring 1732, he purchased 10 wedders from a tenant in his neighbourhood, which had been fattened upon the rye-grass pasture; and these wedders Sir David immediately sold to an Edinburgh butcher; and although mutton was almost the only fresh meat that could then be brought to the market, the butcher stipulated three several terms to take away even that small number, to prevent the Edinburgh market from being overstocked with fresh butcher meat. It was the practice then, and continued for long after, for each family to kill and salt as much beef and mutton betwixt Michaelmas and Martinmas, as would sufficiently serve them during the winter, and until the season of killing lamb returned. This practice prevails very generally in Scotland at this day, and is of high antiquity. By the *Leges Burgorum*, c. 70. the butchers in the burghs were obliged to serve the other inhabitants, *tempore occisionis*, i. e. the killing season, which is described to be from Michaelmas to Christmas, *in carnibus suis præparandis, & in lardam conficiendis* at a fixed price; viz. an *obulus* (an Attick coin, about five farthings of our money,) for killing, curing, &c. every bullock or cow, or hog, or five sheep; and he was to eat with the servants of the family while so employed: This seems to have been the value of a day-labourer, who got his victuals: And another passage in the same book, c. 66. seems to fix the value of a day's labour, without victuals, at 3d. 3-4ths.

Mr Law of Elvingston, the Sheriff of this county, and who is not so old as Sir David Kinloch by several years, informs, that he remembers when there was not a bullock slaughtered in the butcher market of Haddington during the whole year, except in the period above mentioned, which we call *Ladner Time*; and 2s. 6d. per stone Dutch weight, was reckoned a high price.

land a land steward, or farm overseer, of the name of Wade, sometime about the year 1740.

This land steward raised turnip broad cast, upon that part of the lands of Yester in the natural possession of the Marquis, upon which he fed a few wedders; and he raised their price from 8 to 16 shillings. Mr Somner in Castlemains, a tenant upon the estate of Yester, followed the example of his landlord, in occasionally growing a few turnips. But it was reserved to the late Sir George Suttie of Balgone, to introduce turnip and the broad clover as regular and systematic crops into this county.

Sir George returned from the army soon after the peace of Aix la Chappelle, as already mentioned; and having served in the Flanders war, he had an opportunity of seeing there, and also when occasionally quartered in the county of Norfolk, the turnip husbandry in high perfection; and soon after the year 1750, he introduced the regular Norfolk system of horse-hoed turnip, barley, clover, wheat, upon his own farm, which he successfully followed, until the infirmities of age induced him, in a great measure, to give up agriculture.

Much about the same period, some of the tenants in this county, particularly upon the coast, used to sow from a half an acre to an acre of clover, according to the extent of the farm, for feeding their horses when employed in what we call *long carriages*; that is, laying in, during the summer, a stock of coals for themselves and their landlords, for the winter.

It consists, at the same time, with my personal knowledge, that many of these tenants, who had such small patches of clover, regularly *suppered*, as we call it, their horses; that is, fed them for the greater part of the summer in the stable during the night, with the thistles their servants pulled in weeding their corn fields.

It is within these 30 years that the turnip and clover husbandry, came, properly speaking, to be generally adopted in

this county ; and it was first introduced, to any extent, by two tenants of the name of Lee, who came from Teviotdale, and settled upon the estate of Mr Nisbet of Direlton, in the low district, and in the eastern part of the county.

HAVING thus finished what may be called the historical detail of the progressive agricultural improvements of this county, I shall now proceed to state the different systems, or the most approved rotation of crops, upon the several species of soil already mentioned.

It will be proper, however, in the 1st place, to observe, that the out-field culture already explained, had begun, even prior to the 1750, gradually to suffer a considerable change, especially where fallows had been introduced, whereby many of the richer brakes of the out-field were brought under the in-field culture, by a rotation of six in place of four, as formerly mentioned ; as follows : 1st, fallow and dung ; the 2^d wheat ; the 3^d barley ; the 4th oats ; the 5th pease ; and the 6th wheat ; and then the same rotation re-commenced.

Although this rotation has in a great measure yielded to another in which broad clover and beans are introduced, it has not been altogether abandoned, particularly upon the strong lands in the middle district.

Sir George Suttie's Out-Field Culture.—The Norfolk system followed by Sir George Suttie has been already noticed, and shall not be repeated. But this gentleman had 14 acres of out-field clay land, rather inclining to wetness, and which he considered as too remote from his stable-yard to be dunged from it : His system upon that piece of ground was peculiar, and at the same time successful, and may be easily and usefully practised in many parts of Scotland : It merits particular attention.

It was divided into two brakes, to each of which he gave successively a thorough fallow, and he sowed oats with broad clover upon these fallows.

The first crop of course was oats, and the second clover; and after the first cutting of the clover, he plowed up the ley, and gave it what we call a *bastard fallow* with three furs, to prepare it for oats and clover again.

In short, he had alternately oats and clover, upon each of these brakes, without dung or any other manure; yet his crops increased, and his ground improved under this mode of culture; and he assured me, that taking the crops of oats for a period of 14 years, they produced, at an average, fully seven bolls per acre, even including one unfortunate wet season, which nearly destroyed that crop; and laying that year out of the average, he had a return of nine bolls per acre.

As this system appears obviously to require only to begin with cleaning the land by fallow, and to repeat a fallow occasionally, when the ground shall get foul again, it seems to recommend itself to the serious attention of every husbandman.

But if any doubt should be entertained that broad clover is capable of being raised upon out-field, a light dressing of lime or of compost (if lime shall not be within reach,) may be given with the fallow, to insure the first crop of clover; and the next sowing of clover, and every subsequent one, will take care of itself.

Every person who has out-field upon his farm, may easily follow this system, which will enable him to sow out with grafs feeds a corresponding portion of the in-field, without diminishing the winter food for his stock.

Turnip Husbandry, upon Dry Gravelly Loams in the Low District.—As the turnip husbandry of this county is of modern date, it cannot be expected we can bring forward any system that has to boast of long experience to confirm it.

The first rotation of crops, after the introduction of turnips into our system, upon dry gravelly loams, was a rotation of six, as follows : 1st, turnip with dung ; 2^d, barley ; 3^d, clover cut in hay ; the 2^d growth pastured ; 4th, oats upon one furrow ; 5th, pease or beans ; and the 6th wheat ; then turnip and dung again.

The lands upon which this rotation was followed are upon the coast, where they have the advantage of sea weed, which was laid generally upon the oat stubble for the pease or beans.

Lately the rotation has been reduced to four, and in place of dunging to the turnip, the dung is laid upon the clover ley for oats or wheat, but more generally oats ; 2^d crop, turnip ; the 3^d, barley or spring wheat ; 4th, clover cut in hay, the second growth pastured ; and the rotation again returns.

It has been found that the turnip crop is more certain upon such loams, when taken the second year after the dung, than when dunged to the turnip, as the dung in that case was apt to keep the ground too open, and thereby expose the plant to the summer drought.

I should have mentioned, that the turnips upon this species of soil is generally eat off the ground with sheep flaked upon it ; but as this mode of using the turnip, although it certainly very much enriches the ground upon which they have been raised, deprives the husbandman of the command of the dung, and the power of applying it to any other of his fields.

In order to remedy this inconvenience, a practice is now beginning to be adopted, to draw two of the drills of turnip for the purpose of stall-feeding, and to leave the third to be eat off by the sheep.

It has also been found by experience, that when barley is sowed after the turnip with clover, and then wheat after the clover, the wheat is not so productive a crop as when oats are taken in place of barley after the turnip ; that is to say, when the rotation is turnip, oats, clover, wheat, the wheat is as

much more productive crop than when the rotation is turnip, barley, clover, wheat, according to the Norfolk system. I have been informed of the following experiment that was made to ascertain this fact :

After the turnip, the one half of the field was sowed with barley, and the other half with oats ; and as the division was made across the field, the one half of each ridge was of course in barley, and the other half in oats.

Clover was sowed with both of these crops, and a crop of wheat was taken after the clover in the usual manner.

The result was, that the wheat after the half that had been in oats, was a much more productive crop, than the wheat from the half that had been in barley ; and it was observed, that, a number of the heads of the wheat, upon the barley half, were not filled ; or, in the language of Virgil, "*vanis elusit aristis* ;" and the stem seemed to have died immediately after showing the flower.

The reason assigned for this material difference, is, that in preparing the land for barley, it got two furrows, whereas the land upon which the oats were sowed got only one furrow ; and it is supposed, that the additional furrow for the barley rendered this naturally light and open soil, too free and loose for the wheat crop ; the experiment, however, is to be repeated, and the oats and the barley are each to get an equal number of furrows.

As this experiment will ascertain the fact, it would perhaps be improper to indulge a conjecture as to any other cause : But as wheat and barley seem more nearly allied to each other in the vegetable kingdom than oats and wheat, it is at least a possible case, that the barley may consume more of the *pabulum* necessary for nourishing the wheat, than the oats will do.

I hazard this observation with the greater confidence, as I have heard the late Sir George Suttie repeatedly say, that when he first began farming, and followed the ancient system of sowing barley after wheat, he always found the barley a

false crop, and he said it never produced within two bolls per acre, of what the appearance of it, when upon the ground promised. It would from thence appear, that the first of these crops hurts and robs the subsequent one.

There is another alteration I observe is now beginning to be pretty generally adopted, viz. to sow oats after turnip.

The species of oats commonly sowed in this case, is the early white oat, which we call the Dutch, as it came to this county originally from Holland; it seems, however, to be the same with the Essex and Polish white oat.

This species of oats is liable to shake, and it must on that account, be cut while the straw is quick.

Deep Loams upon a Dry Bottom.—The next species of soil under the turnip husbandry, is the deep loams upon a dry bottom, which, as they retain too much moisture to admit of the turnip being fed off with advantage, by sheep, the turnips are drawn, and part of them are given to sheep upon a dry pasture, and part are given to oxen in the stall.

The *second* crop is barley or spring wheat, with grass seeds of different kinds, to the amount of 20 pounds of the several species clover, and from a bushel to a bushel and a half of ryegrass to the acre; the 3^d and 4th crops are pasture, and eat with sheep; the 5th is oats; and the 6th is barley; and then turnip again; and in this rotation the dung is always given to the turnip.

It may perhaps be proper, in the close of this account of the turnip husbandry, to observe, that, almost universally, the turnip in this county are sowed in drills and horsehoed.

Sir George Suttie originally made his drills six feet asunder; and he never made them less than four; but at present, our drills are only about 30 inches wide, and, as nearly as can be guessed in the hoeing, each plant is left from five to seven inches distant from the other, in the drill.

The number of horse and of hand hoeings, depend very much upon circumstances, as the weeds must diminish pro-

gressively, the oftener the turnip crops return ; but the ordinary rotation is as follows :

The first operation is to destroy the weeds betwixt the drills, with a horse hoe, which has been recently introduced into our practice, and admits of being made wider or closer, according to the space betwixt the drills.

Afterwards, the turnips in the drill are cleaned with the hand or Dutch hoe, and the turnips are partly thinned ; and, in the course of a week or two, the earth is taken away with a small plough.

James Small, plough-wright at Ford, near Dalkeith, about 2 years ago constructed these small ploughs with a bend in the coulter, which makes it cut closer to the turnip, without the horse being in danger of treading upon them.

While the turnips are in this state, they get their last hand-hoeing and thinning ; and recently before harvest, the earth that was taken away, is laid back, and the business in general is then concluded : But if a growth of weeds shall appear after this period, they are destroyed as soon as the more important operations of the harvest will permit.

The turnips in this county, under the culture that has been just described, do, in general, compleatly cover the ground in all October, and they smother and suffocate every weed, that may have escaped the previous care and industry of the husbandman.

In some counties, both in England and in Scotland, the turnips are sowed broad cast, and their culture is by the hand-hoe alone.

The drill and the hand-hoed system of this plant, have each of them their votaries. But taking a comparative view of the two, and supposing, in the 1st place, the turnip as a meliorating crop only, it would seem that the horse hoed system is superior to the other, exactly in the *ratio* that more ground is moved and stirred by the horse hoeing, than by the hand hoeing.

2dly, Taking turnips merely as a crop, unconnected with the cleaning and the meliorating of the ground ; it would seem, that the value of each crop should be nearly in the *ratio* of the weight that is produced, and resolves into this question : Which of the two systems, *Cæteris paribus*, give the greatest number of healthy and vigorous plants ? and if the drilled husbandry shall sufficiently fill and cover the ground with such plants, it seems to follow, that in point of produce, it should be equal to the broad cast system, while in other particulars it confessedly possesses some advantages.

It is a different question, how far the expence of the one may or may not exceed the other ; but it seems obvious, that the hand hoed husbandry requires more *extra* labour by the hand, than any husbandman remote from a village can command within himself ; whereas, in the other mode, if two thirds of the work of the cleaning and cultivating the turnip can be performed by the horse-hoe and the plough, the husbandman who practises that mode of culture, has it more in his power to command within himself, the means of carrying it to perfection, than the other who depends entirely upon manual labour.

The result of the whole seems to be, that the drilled, or the horse hoed system of the turnip husbandry, requires less artificial and adventitious aid, than the broad cast or the hand hoed system.

The ordinary allowance of sheep, to an acre of good turnip, is sixteen wedders, of the mixed Highland breed, which are purchased at the rate of, from 12l. to 15l. per score

When the turnips are drawn, and eat by sheep in a dry field, in place of being eat off, upon the ground, the allowance to the acre, is a score of such sheep, and the expence of drawing is about 30s. per acre.

In stall-feeding, the ordinary allowance is two bullocks, of from 6l. to 9l. value, to the acre.

Before concluding the systematic rotation upon loams, I beg leave to mention a rotation which is considered to be singular, but, as it is very productive, it ought not to be overlooked.

The ground I allude to lies immediately around the town of North Berwick; the soil is deep and rich, and at the same time a light loam, and lyes within the reach of great quantities of sea weed; upon this soil they have drilled beans and wheat alternately; and they introduce a fallow only occasionally, when the ground becomes dirty, and requires cleaning. The beans are dunged or dressed with sea weed.

Loams upon a Hard and Clay Bottom.—This species of soil is by no means adapted to the turnip husbandry; and is properly the wheat and the bean soil.

The *first* crop after fallow and dung, is wheat; and the fallow is but lightly dunged, that is, about 14 double carts to the acre, each cart supposed to contain about 2 cubic yards. The *2d* crop is oats; the *3d* crop is drilled and horse hoed beans; and the bean stubble is again lightly dunged; and if the season admits, it is sowed with wheat, and, failing of wheat, with barley. Grass seeds indiscriminately are sowed with this crop, whether it be wheat or barley. The field is either cut or pastured for one year; it is then broke up for oats, which ends this rotation; and it recommences again with fallow.

It will be observed, that this is a rotation of seven, but *dunging* is twice introduced in the course of it; which is, in other words, saying, that the dung is divided, and two slight dressings are now given, in place of one heavy dunging, which is supposed of greater advantage than giving all the dung to one crop.

The practice formerly was, to lay at least 30 double cart loads of dung per acre, upon fallows, either for wheat or barley; and it frequently happened, that the crop was *flooded* by

being too strong ; and sometimes a heavy shower of rain, such as often attends thunder in the end of July, lodged it so completely, that it never afterwards got up again.

Another rotation is, 1st, fallow and dung ; 2^d, wheat and grafs seeds ; 3^d, pasture with sheep ; the 4th, is oats ; the 5th, pease or beans ; and the 6th is wheat or oats.

This is a rotation of six, and dung is introduced only once.

But the year of pasture, being the 2^d after the dung, and the grafs being eat off with sheep, is supposed, and I am inclined to think not unjustly, nearly equal in point of melioration to a light dunging.

The 3^d and last rotation I shall mention upon this species of soil, is the following ; 1st, fallow and dung ; 2^d, wheat ; 3^d, drilled beans ; 4th, barley and grafs seeds ; 5th, hay ; the second growth pastured, and the clover-hay is dunged and plowed for wheat or oats.

We find, from experience, that oats is a more certain and a more productive crop, than wheat after grafs, although even for one year.

The probable cause of this, (which is so different from the Norfolk system,) seems to arise from the quantity and species of grafs seeds generally sowed, which is from 10 to 16 pounds of red clover, from 6 to 8 pounds of yellow clover, an equal quantity of rib grafs, and from one to two bushels of rye-grafs per acre.

All these plants, the red clover excepted, ripen their seed, and they grow, self sowed, perfectly well in this climate ; it would therefore seem, that when the ley is reduced to a proper tilth for wheat, the seeds of these plants that have been shaken, strike and grow up with the wheat, and are apt to choak it ; whereas when this ley is sowed with oats, it gets one furrow, within a few weeks only of its being sowed ; and the sod remains too firm for these small seeds, while at the same time the oats grow freely, and choak or smother all below them.

Thin Clays upon a Hard or Cold Bottom.—The thin moorish clays in this county, seem to me to have been that portion of ground, set apart formerly for feal and divot, in those farms which had not the advantage of a common pasturage; and, by having been in this manner, pared and robbed of their soil, do now exhibit a poor and barren surface.

The mode of culture upon this soil is various, and depends a good deal upon the quantity and quality of the soil that has escaped the waste committed, by the paring.

One rotation is fallow, and, if dunged, it is sowed with barley: But if dung cannot be spared, from the other necessary purposes of the farm, it is sowed with oats and grass seeds, and pastured for two years, and then broke up for oats, and fallowed again, and sowed with oats and grass seeds, without dung.

Another rotation upon this species of soil, but of a better quality than the one just mentioned, is as follows: Fallow, and if dunged, it is sowed with wheat; if not dunged, with oats; and grass seeds indiscriminately are sowed, with the wheat, or with the oats; and after being pastured for two or three years, just as the grass is thriving, it is broke up for oats; and if the fallow had been dunged, the future rotation is barley, then beans, with a light dunging, and then wheat and the fallow and dung again returns.

Where the preceding fallow had not been dunged, a fallow is introduced immediately after breaking up the pasture with oats.

Although the rotations above mentioned, upon the strong loams, and the different species of clays, are the most approved, in the low and middle districts, I must observe, in the 1st place, that in those rotations of six, or where a succession of crops are taken, betwixt the fallow and grass, these rotations are sometimes interrupted, and a fallow is introduced before its course, if the land gets foul; and it is a rule very generally established in this county, that upon those soils which do not

admit of the turnip husbandry, a fallow must not be delayed until it comes round in its rotation, if the state of the field shall require it sooner.

AGRICULTURE IN THE HIGHER OR THIRD DISTRICT.

THE higher district of this county is in general inferior in point of quality, to the same species of soil in the two lower districts: it contains, however, a great deal of land, well adapted for both the systems of turnip husbandry already mentioned; but although most of the tenants in that district grow a few turnip, it is principally in the Western part of it that they observe a systematic rotation.

One of these rotations is, as in the low country, divided into four; viz. 1st, turnip with dung; 2^d, oats if the land has been formerly out-field; or barley, if in-field, and grafs seeds indiscriminately with each; the 3^d, hay, the second growth eat down partly with sheep, and partly with cattle; and the 4th crop is oats.

Another rotation, and one perhaps fully better adapted to the soil, is, to introduce two, three, or more years of pasture, where the benefit of inclosures admits of this being done.

The rotation upon the strong lands, with two exceptions, is nearly the same as in the lower district.

The *first* exception is, where the land is inclosed, it is kept two or more years in pasture, after being sown out.

The 2^d exception is, that as they sow much less wheat in this, than in the other districts, barley is more generally sown.

ed after their fallow ; and oats or barley are commonly introduced, where wheat is taken in the lower districts *.

Climate for Wheat.—This county is bounded on the South, as already mentioned, by the hills of Lammer-moor, some part of which are locally situated within it ; and it has a general inclination northwards from these hills down to the sea, and this inclination is rather sudden.

These causes may perhaps explain why wheat is seldom found a beneficial or a productive crop, at an elevation of about 500 feet above the level of the sea.

This rule may no doubt admit of exceptions, arising partly from the extraordinary quality in the soil, and the locality of situation, both as to exposure, and being sheltered or protected by higher grounds around it ; but if an opinion may be hazarded, as to the climate for wheat, in the latitude of 56 degrees North, I would say, that where the general wheat harvest does not admit of the wheat crop being reaped, at the latest, by the 2d week of September, I should incline to be of opinion, that barley or oats will prove a more productive crop.

It frequently happens, that particular fields of wheat, from accidental causes, are later of being reaped than the period just mentioned. But where the general harvest for wheat is earlier, the climate is comparatively more mild, and will rip-

* Mr Brown of Coalstown.—“ In some of my grounds in this district, and particularly upon the farm of Howden, which lies high, I found that I frequently lost my pease crop, which rendered a fallow absolutely necessary after the next crop that followed the pease ; and as the loss of the pease crop materially reduced the quantity of dung, I was under the necessity of changing the rotation, so as to get free of the pease ; with this view, I adopted a rotation, of which, though not unexceptionable, from having two white crops successively following each other, I found from experience to be profitable, and my lands improving in quality. My rotation is, 1st, fallow and dung ; 2^d, barley on the winter furrow ; 3^d, oats upon a furrow given soon after harvest, and sowed out with red clover and about a bushel of rye grass ; 4th, hay, and the after growth pastured ; the 5th, oats. I have found the oats from the clover ley return from 9 to 12 bolls per acre, even in that high situation.

en these later wheats tolerably well ; but the wheats and the barleys of the finest quality, are those that are ripened in all August.

Seasons of Sowing.—Before the introduction of the turnip husbandry, and after fallow came to be pretty general, every species of soil indiscriminately was cleaned and prepared for wheat, with a black fallow and dung ; the practice then was, to sow wheat upon these fallows, in the month of August, or early in September.

It was found, however, from experience, that these wheats grew very luxuriantly ; but the crops were deceitful, and that they did not *bleed* in corn, in proportion to their appearance and bulk.

The season of sowing wheat upon fallow, became upon that account gradually later ; and, upon the stronger lands, it was generally sowed about the beginning of October, and, upon the light loams, the season of sowing wheat was postponed to the end of that month.

It is somewhat singular, that experience should have led our husbandmen, to approach so near that season of sowing wheat, which Virgil has prescribed as the surest for a productive crop in the climate of Italy ; and that the sowing too early should produce the same effect in both climates, although so remote from each other in point of latitude. Virgil has given his opinion, and he states the fact upon which it is founded, in the following elegant lines :

“ At si triticeam in messē robustaque farra
 “ Exercebis humum, solisque instabis aristis :
 “ Antè tibi Eoæ Atlantides abscondantur,
 “ Gnosiaque ardentis decedat stella coronæ ;
 “ Debita quàm fulcis committas semina, quàmque
 “ Inertæ properes anni spem credere terræ.
 “ Multi ante occasum Maiæ cœpère : *sed illos*
 “ *Expectata seges vanis elusit aristis §.*”

§ The setting of the Pleiades here alluded to, happened, in Virgil's time, about the end of October. Virg. Delph.

Of late, a succession of two or three wet seasons, towards the close of the autumn, which prevented the sowing of wheat upon the strong lands, has led the husbandmen upon these lands to return to the earlier season above mentioned ; and some of them have informed me, that these early sowed wheats were wonderfully bulky, and that they did not give in proportion to that bulk ; but at the same time, that the total produce, both in quantity and in quality, per acre, was, upon the whole, greater than the later sown wheats gave upon the same soil.

In the last autumn (1793,) there was a deal of wheat sowed upon the strong loams in the month of August ; and, from the openness of the season, the heads or ears in these wheats were found, upon examination, to be formed about the 20th of January (1794) ; and considerable apprehensions are entertained, perhaps not without reason, respecting the fate of the crop, from the wheats in that situation.

It is easy to state facts, but it is a difficult matter to draw just conclusions from these facts, upon a point so deeply involved in those hidden principles of vegetation, which nature seems to have veiled from human understanding in a mysterious and impenetrable cloud.

Without inquiring, therefore, too curiously, and perhaps in the end unprofitably, at what stage or period of vegetation the ear of wheat is formed in the plant, the general and the most accurate practical observation in this county, is, that in these early wheats, the ear is supposed to be so far advanced in the end of April, as to be exposed to the severe cold northerly and frosty winds, which generally prevail about that season ; and that their malign influence is the cause of the ear not being so compleatly filled as the ear of the later wheats, which are better cloathed at that period, so baneful to vegetation in high latitudes.

If, however, the preceding winter shall have proved proportionally as mild, in the countries to the North of 56° , as it has proved in this county, our April perhaps may be mild in

the same *ratio*, and these early wheats of course give a good crop *.

The season of sowing wheats upon light lands, still continues to be about the end of October, and the beginning of November; but within these few years, and since the introduction of spring wheat after turnip, wheat is sowed in this county at every period when the land is in order, from the month of August down to the first week in April.

Spring wheat has been found to answer well, upon light rich loams after turnip, which have been eat off by sheep. But it has not proved so productive a crop upon the 2^d species of turnip soil already mentioned.

Kinds of Seed Wheat.—In the higher parts of this county where wheats are sowed, it is generally the early Lambmas red that is used.

In the lower district there is great variety of seed: some prefer the short eared wheat of Essex, and others the tall and the long eared wheat of Herefordshire. But the seed most in repute at present, is what is called the *velvet wheat*, from its having a thick down at one end of the grain.

This species of wheat is white, and is a large plump grain. It was originally raised from a few remarkable ears, by Mr Mackie, tenant in Ormiston, upon the estate of Hopetoun, in the western part of the county.

There is a 4th species, called the *small wheat*, which is of Polish extract, although it came to this county from England.

This wheat is short in the straw, and the ear is apparently short; but the chests, or compartments for the grain, are very

* This Report was prepared for the press, in the course of the last winter, and principally in the month of January 1794; and this part of it, in particular, was then wrote; but different accidental causes having concurred to retard the printing of it, I can now (October 1794,) speak with certainty as to this conjecture; and say, that April last was remarkably mild, and our whole season seemed to be one month advanced; and that these early sowed wheats have turned out a very productive crop.

thick set : it is not so liable to shake or to lodge with rain as the other kinds.

The millers and bakers prefer it, and give a higher price for the boll of this wheat than for any other ; and it is generally admitted to yield from 8 to 12 pounds of flour per boll, more than the other wheats.

This in all probability proceeds from the grain being small, and packing better in the firlo ; but notwithstanding that the number of firlots produced from an acre, may thereby be lessened, I have raised from 12 to 13 bolls of this kind of wheat upon the acre, and I have numbered from 51 to 57 grains in one ear.

Pickleing of Seed Wheat.—The practice of pickleing the seed wheat is very ancient in this county ; and although it is difficult to believe that it has remained with us as one of the reliques of the Roman husbandry, it was certainly a practice very general in the time of Virgil.

“ Semini vidi equidem multos medicare ferentes,

“ Et nitro prius et nigra perfundere amurca,

“ Grandior ut fœtus filiquis fallacibus effet.”

The liquid used in the pickleing of seed wheat in this county is of two kinds, the one is *stale urine*, and is the most ancient pickle ; the other is a pickle made of marine salt dissolved in water ; and the rule is, to continue adding salt to the water, until the mixture shall become strong enough to swim an egg.

This pickle is now most generally used ; but many intelligent farmers adhere to the former, and some of them state, in point of fact, that they never had any *smut* after using the first species of pickle, but that they have observed their crop affected with this distemper, after using the marine pickle.

The first pickle must be applied with a sparing hand, and the grain must be sowed immediately ; for if it lye one night, or even for a shorter period after the application of this pickle, the alkaline caustic quality of it corrodes the eye of the grain, and completely deprives it of every vegetative power.

The other pickle is not so dangerous in this respect. And the wheat is stirred about in it, and carefully skimmed, and the light grain is laid aside.

The wheat, after being pickled in either way, is dried by throwing quick lime upon it, and the seed, when committed to the ground, is inclosed in a thin crust of lime.

Smut in Wheat.—Perhaps the skimming of the seed when in the 2d pickle, may tend to prevent *smut*, by taking away the light or ill filled grains ; but he is a bold man who attempts to explain with certainty the various causes of *smut*. The remedy, however, or, to speak more properly, the mode of preventing this disorder from infesting our wheat crops, may not be so difficult ; and the violence of it has abated progressively in this county, within these last 20 years, since a more correct attention has been bestowed to clean and prepare the ground for that crop.

In order to discover the remedy, it may perhaps be necessary to narrate, in point of fact, the species of soil upon which this distemper appeared most generally, and the antecedent state of the ground that produced the infected crop.

The soils most infested with this baneful distemper, were, in the 1st place, the strong lands of the 2d and 3d species already described ; and sometimes it appeared upon these soils, even in the first crop of wheat after fallow and dung : 2dly, It occasionally appeared upon lands of every description, when wheat was sowed after pease in the rotation of six ; that is, when wheat was the fifth and the last crop before fallow.

In the last place, the smut in wheat was most general after a wet open winter, and a cold dropping, or, as we vulgarly call it, a *blasby* spring.

From these premises, it would seem, that smut proceeds from one of two causes ; viz. either poverty in the soil, and the ground not being in proper order for wheat ; or, 2dly, when the plant has been hurt by too much cold and moisture, al-

though the ground was in every other respect in proper order for producing wheat, and, barring this accident, would have given a plentiful return for the labour and the industry of the husbandman.

Before drawing any conclusion from these facts, I beg leave to state some others, that seem analagous to the subject, and have fallen within my own observation and experience.

The small farm I have cultivated for some years, was originally either *out-field*, or a *common* set apart for divot.

When I first began the cultivation of this barren and unhospitable soil, I have repeatedly observed a considerable number of smutted ears in the barley, and in the oat crops; for at that time I never attempted wheat.

The smut in these crops blows away before the corns come to the sickle. I have known however almost every fifth stalk smutted; but progressively as this ground has been brought into better tilth by deep plowing, and repeated dressings with compost, the smut has gradually abated; a smutted ear is now rarely to be seen, and lately it has produced plentiful crops, even of wheat, in which a smutted ear could not be found; and last year (Autumn 1793,) all the wheat I sent to market was purchased for feed.

It seems to follow, that wetness or sterility in the soil, which produce a sickly plant, are the causes of smut.

If I may be allowed to hazard another conjecture, I would almost say, that smut is the *symptom*, and not the *disorder*: And that it is a vermin, produced by a bad habit of body, if the expression may be allowed, in the plant; and that this bad habit is occasioned by the poverty or the bad quality of its food.

Almost every starved animal, that has been pinched with poverty and cold, during the winter, generally shows vermin upon its skin in the spring; the cause of which seems obvious; and it is by no means impossible, that the vegetable kingdom may in similar circumstances be subject to vermin, or may

show symptoms corresponding to the vermin in the animal kingdom *.

A change of seed has been found also by experience to be of use in preventing smut; and the husbandmen in this county have really a great deal of merit, from the care and attention they regularly bestow in procuring changes of seed, not only from different soils, but from more kindly and more favourable climates.

Although the practice of changing seed is certainly very ancient in this county, I will not venture to say, that it has remained with us under all the vicissitudes that have occurred since the time of the Romans. But Virgil has directed the Roman husbandmen to do as Mr Mackie and others in this county have done;—to gather a few of the most vigorous, and most healthy ears of the different species of corn, and to raise a new seed from their produce.

“ Vidi lecta diu, & multo spectata labore

“ Degenerare tamen; *ni vis humana quotannis*

“ *Maxima quaque manu legeret.*”

VIRG. GEOR. I.

Barleys.—There are several different species of seed barley used in this county; viz. 1^{mo}, The old Scotch barley; that is, the barley that has been sowed in this county for time immemorial, and has thereby become naturalized to the soil and the climate. And, 2^{dly}, this barley, when sowed upon the coast lands manured with sea weed, which we call *ware barley*.

Although both these species of seed give a more plentiful crop, and a better grain, if sowed in April, yet they will bear to be sowed towards the end of May; and the ware barley may be ventured a week later than the other. They produce, upon good land, a fair round short grain.

There are three kinds of the winter barleys; viz. The Lincoln, the Thanet, and what is called Sir George Suttie's bar-

S

* *Vide* Mr Winter's experiments in preventing the fly upon the turnip; the healthiest plants always escaped.

ley, as it was raised by that gentleman, from three ears of a particular growth.

This barley is fair, and remarkably short and plump in the grain. It is distinguished, while growing, by the grains projecting from the ear nearly in a horizontal direction.

The Lincoln and Sir George Suttie's barley, require to be sowed in March; the sowing of the Thanet may be delayed till the month of April.

The Scotch barley gives the truest crop, both for quantity and quality; but it is more apt to lodge and to *loom*, than any of the other three, which on that account are generally preferred for high improved grounds, or where grass seeds are to be sowed.

The four sided barley, which we call the *rough bear* or *big*, is mostly confined to the Fourth District of this county: It requires six weeks less of the ground than any of the others, to bring it to maturity.

Sir David Kinloch of Gilmerton has very lately got from Switzerland a species of this barley, with six rows in the ear, which he informs is very prolific, and some of the ears have produced 64 grains.

This species of seed, although new in this county, is very well known in Aberdeenshire, where, from its prolific quality, it is called *make-him-rich*.

Seed Oats.—There are also various species of seed oats in this county; viz. 1st, The common oat; 2^{dly}, The *Blanslee* oat, which is produced in a highland district in Berwickshire, upon a light sharp gravelly soil; 3^{dly}, The *Angus* oat, which is produced in a similar district and soil, in the county of Angus; and they make a very good change for our strong heavy lands: 4^{thly}, The Dutch, or the early white oat, which is frequently sowed after turnip, as already mentioned; and, laterly, the red oat has been introduced by Mr Brodie in Upper Keith, and several others in the high part of this county

This oat has a redish shade when ripening, and is not quite so apt to shake as the Dutch oat ; and although not so early, it is more so than the other kinds.

Pease.—Of this species of corn, we have little variety of seed : the common pea is of two kinds, one is a light brown, with small dark coloured spots, very much resembling the Dutch pea, which they call *Grauw-erweten*.

The other is darker in the shade, and not so large ; both these kinds are late, and require to be sowed early in March.

The other seed is sometimes called the *Peebles* or *Magbeihill* pea, because it came originally from Mr Montgomery of Magbeihill, in the county of Peebles. This seed is early, and may be sowed through the whole of April, particularly on light lands.

3^{dly}, There is the *horse* pea, which is a large species of the vetch ; and, *lastly*, the tare ; both of these species are generally sowed for green food, and in the autumn, succeed the red clover.

Beans.—We have but one species of the field bean used in this county ; it is sometimes called the French, and sometimes small horse bean ; it is late of ripening, even upon our best lands. But it stands a great deal of wet weather, without being materially injured, provided it is cut while the straw is green ; but if it shall be allowed to remain upon the ground uncut, until the straw becomes black and withered, the pods are apt to open and lose the bean.

Artificial Grasses.—The artificial grasses used in this county, are the same with those sowed in most of the corn counties of Great Britain ; viz. The 3 different species of clover, rib grass and rye grass.

The white clover is not so generally used now, as it was about 20 years ago ; as the new limed lands produce it spon-

taneously, by the end of June, and beginning of July, that is, when the weather gets warm; and, on the other hand, the yellow clover has got into general use; it succeeds upon every species of soil; but it seems particularly adapted to the colder soils; and I do recommend it, from long experience, as a most valuable plant for that species of soil.

Lucern and faintfoil have been repeatedly, but unsuccessfully, tried in this county; neither our soil nor our climate seem adapted to these plants †.

Northern Lucern.—About three years ago, a friend of mine brought me from Sweden a very few seeds of the plant he called the *Medica Septemtrionalis* of Linnæus, which hitherto has been confined to the garden; it is impossible, therefore, to state any fact as to its usefulness in husbandry. But it grows very slow the 1st year, so as to admit of cutting only once. The 2^d year it grew luxuriantly; and now, the 3^d year, still more so.

Even in the few grains of seed I received, there were 3 kinds; the one has a small whitish flower; the second has a yellow tinge, and the third a purple shade in the flower.

† Since this part of the Report was prepared for the press, I have had an opportunity of examining, in company with a member of the Honourable Board of Agriculture, a field of lucern, cultivated by Mr Hunter of Thurston, which, although within a few miles of the coast, is highly elevated above the level of the sea: The soil is a thin clay, upon a stony bottom; this is the fourth year from the planting of it; and, upon the 28th of August 1794, which was the 22^d day from the second cutting of it this season, we measured several of the shoots, and found they had grown nearly one inch a day, from the former cutting. Mr Hunter has correctly followed the directions given in *Hart's Husbandry*, for the culture of lucern; he sows it in a seed bed in March, and transplants it to the field; about that time twelve months, he carefully cuts off the top root, and leaves it about nine inches long; the distance between the drills is 3 feet 4 inches, and about one foot from plant to plant in the drill; he plows and harrows (with a small harrow) between the drills, immediately after each cutting; and notwithstanding the above distance, the whole ground is soon covered with the crop; it will not answer for pasture, as Mr Hunter has found that the tread of a horse wounds the plant, and soon kills it; he cuts with a sickle and carries the crop to the head ridge in a wheel barrow, before carting it, to protect the plant.

The first kind is now (March 1794,) six weeks farther advanced than the broad clover; and the other two are about three weeks before the clover. But although I have carefully gathered the feed these two years, it is now only, that I have discovered the superior advantage of the plant that gives the white flower, owing to my not having been so early in the country, in the two former springs, as in the present. I shall in future keep the white separate from the other two species: The Honourable President of the Board saw them growing very luxuriantly last summer, while every other crop in this neighbourhood was severely parched with the drought.

The Culture of the Potatoe.—This root was first introduced into this county, about the year 1740, which was a year of dearth; when a few were imported from Ireland; but their culture was confined to gardens until the year 1753, or 1754, when Mr Hay, a tenant in Aberlady, raised them in the field.

It is only, however, within these very few years, that this plant has become a very general article of food among the common people; and it now constitutes nearly one third of their food, from the 1st of August till the end of May. If it came to Europe from America, as is generally believed, it is unquestionably the most valuable acquisition that the ancient world has derived from that newly discovered part of our globe.

The varieties of this plant are truly infinite, and they are subject to perpetual change.

The 1st kinds known in this county, were the red and the small flat oval kidney, which were soon lost, and the London drooper, the leather coat, (from the roughness of its skin,) the Lancashire manly, (from its size,) the blackimore, (*i. e.* the dark coloured Virginia,) and the *Killimancas*, or Jeanies, which seem to be a cross betwixt the white and the red; for one kind

is a red ground with white streaks, and white eyes, and another is white, with red streaks and red eyes; and, latterly, the large white kidney, have progressively succeeded each other.

The blackimores and the killimancas, are at present the most productive, but how long they may continue to be so, is a matter of perfect uncertainty.

The different species of this plant seem to mix with each other, merely from growing in the field, more readily than any other plant used in husbandry; and indeed some persons, who have studied the culture of them with accuracy, say, that the crop is most abundant, when the different species are planted promiscuously in the same field; and they advise, also, in choosing the seed, to pick the true kind of each species for planting, and to use the mules or the mixed breed for food.

The Curl in the Potatoe.—The distemper of the curl was not observed in this county until about the year 1778, and it occurred then so rarely, that it was not much attended to.

In the year 1780, we heard of its destructive effects in Lancashire; but it was not till 1784, that it was seriously felt in this county, when it seemed to threaten the total extermination of the plant.

Many conjectures have been formed in this county, as well as by the corresponding members of the Bath Agricultural Society, respecting the cause and the cure of this disorder. But hitherto our efforts in this particular have proved unsuccessful; and the only remedy, as yet discovered, consists in a change of seed.

It is somewhat singular, however, that this distemper is unknown in the higher district of this county, at an altitude of about 400 feet above the level of the sea.

The seed brought from that district, may be planted for two years; but if it be continued longer, the curl takes place, and in the 3^d, and every subsequent year, it grows worse and worse.

The haulm of the potatoe raised in that high district, is in general destroyed by the frost, when it is in full vegetation;

Whereas, in the low country, the haulm gradually decays, and seems to die a natural death, generally in the month of September; and when they are reaped, which is about the end of that month, the apple growing upon the stem is completely ripened, and the haulm is nearly withered down.

This difference seems to prove, that the potatoes for seed should not be allowed to remain so long in the ground, as those that are intended for food. As this is an experiment that can be easily tried, it is submitted whether the Honourable Board of Agriculture, should recommend it to the serious attention of the cultivators of this plant, in those parts of the kingdom which are infested with the curl ¶.

The renewing of the seed, by raising it from the apple, has been repeatedly tried in this county, and it has always proved ultimately unsuccessful; that is, this new seed in the course of a few years became curled.

In the next place, the crop in that high district is more plentiful and productive, than the crop in the low part of the county.

Sixty bolls *per* acre, in the high district, is not reckoned a great crop; but even the best lands, in the low district, rarely produce more than from 40 to 50 bolls *per* acre.

In the West of Scotland, the crops are still more plentiful than in the high district of this county; and in the Highlands, the fairest and the largest potatoes are produced upon the spongy mosses, where they are planted in *lazy beds*; that is, the plant is laid upon the surface, with a very little dung sprinkled upon it, and a trench is dug at the distance of three feet, deep enough to cover the seed potatoes with the stuff taken from the trench.

¶ The *yam*, or Surinam potatoe, (explained in the following page,) never hitherto has been injured by the curl, owing probably to its being a late plant, and the haulm continues growing until destroyed by a severe frost.

† A boll of potatoes, if sold by measure, is measured by the barley or large seler; if sold by weight, it is 27 stones Dutch.

From these circumstances, it would seem, that the potatoe is rather an aquatic plant; and that the climate in the low part of this county is too dry: And this perhaps may be the cause of the plant getting sickly and curled.

There is another species of potatoe, which merits a place in this Report.

We vulgarly call it the *yam*, but it is really the Surinam, or hog potatoe.

This plant is at least a month later than any of the other kinds, and has a harsh and bitter flavour, and is never used as human food; but it is very productive, and is cultivated in several places for the feeding of stock: It gives in general a more plentiful crop, by 30 *per cent*, than any of the kinds already mentioned.

Every species of stock, horses, cows, hogs, poultry, &c. are fed with it; the horses and cows only require to have the yams washed, but they must be boiled for the other animals: And horses, in particular, are so fond of them, that after they have been accustomed to eat them, they prefer them to corn. These potatoes are an excellent food for foals and young horses; they keep them open in the body, and smooth in the coat; and, from experience, I say, that the young stock of horses, fed with this root, grow as much during the winter months, as in the summer; in short, it raises them very considerably in the bone; but their allowance must be larger, than for the working stock †.

One fill of a common stable pail of these potatoes, which weighs about 9 pound, is a sufficient feed for a pair of horses; and this quantity, with half the usual allowance of corn, keeps the horses employed in husbandry, in better order, both as to coat and flesh, than full corn, in the ordinary method of keep-

† I make no doubt the other potatoes would answer equally well, for every species of stock; but as the servants cannot eat the *yam*, there is less danger of the stock being disappointed of their feed of this root.

ing them ; and they are perfectly able for the regular ordinary work of husbandry.

One acre of these potatoes will produce, at a moderate calculation, 70 bolls, at 4s. per boll,—*inde*, 14l.

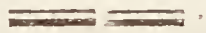
Perhaps they would not bring so high a price in the market, neither would this price pay for the carriage to any distance ; but reckoning them equal to that price to the husbandman, it brings the peck to 3d. ; and as 9 pound weight is exactly the third of a peck, a feed to two horses costs only one penny which is certainly a great saving, when compared to the feeding with corn ; and as far as this plan shall be necessary, in the feeding of stock, they certainly can be raised upon every farm to advantage.

This plant is not subject to the curl ; but if the seed is not changed, it degenerates more indeed in point of size, than in point of weight produced from one stem.

The potatoe has no particular place in the rotations of husbandry ; for in the turnip soils it is raised along with the turnip ; and in the strong lands, it is raised upon a part of the ground set apart for the black fallow.

This last mode of raising them, I think a very bad practice ; because they must be planted so early, that there is not time to clean the land before planting ; and they are taken up so late in the autumn, that there is as little time then, for cleaning the ground, before the wheat must be sowed ; and in this way, that portion of ground set apart for potatoes, must be deprived of its proper rotation of fallow.

The better method would be, to raise potatoes, as a branch of the bean crop.



Manures.—As the ancient Romans were wonderfully careful in collecting, and, it may be truly said, in creating dung,

a short account of their method will form, perhaps, a proper introduction to this part of the husbandry in East Lothian.

The Romans collected every weed, the leaves of trees, the rakeings of the highways, the sweepings of their houses, the scourings of their ditches, every kind of refuse, and even earth of an inferior quality, (*Macer*,) all of which were carried to their dung hills.

There is also another species of dung, mentioned by these authors, which appear astonishing; and we do not seem sufficiently acquainted with their internal oeconomy, to be able to explain it.

They mention the dung of the smaller species of birds, such as the thrush and the blackbird, *merularum et turdorum* †. It would from thence appear they had extensive *aviaries*, even of the smaller birds. But leaving it to the antiquarian to investigate this point, let us trace the Roman husbandman to his dung-yard, where we shall find the quantity of dung they made, thus explained by Columella.

“ Parum autem diligentes existimo esse agricolas, apud quos
 “ minores singulæ pecudes, tricenis diebus minus quam singu-
 “ las, itemque majores, denas vehes stercoreis efficiunt ‡, toti-
 “ demque singuli homines, non solum ea purgamenta quae
 “ ipsi corporibus edunt, sed et quae colluvies cortis et edificii
 “ quotidie gignit, contrahere et congerere possunt.”

What Columella calls the *minores pecudes*, probably means hogs; but what seems singular in this account, is, that every man servant was calculated to give ten loads of dung *per* month, partly by his own production, and partly by his industry, in collecting from the jakes, and other places about the dwelling house, for receiving the refuse of the family.

† Varro.

‡ This author, in another passage, mentions *Viginti quatuor vehes stercoreis* a sufficient dressing for an acre; and comparing the size of the Roman acre with ours, the load may probably be taken at about a cubic yard and a half of dung, or perhaps not quite so much.

I am much afraid, there is not a husbandman in this county, either among the landed proprietors, or the tenants, who can speak of his own attention in this particular, with the same accuracy that Columella, who was a practical farmer, has done; and it must be confessed, we are rather deficient in attention to the making of compost dunghills, and that there is much room for an improvement, in this very essential branch of husbandry.

It is proper, however, to observe, that of late years, a very useful practice has been introduced in this county, and is now generally followed, viz. of wintering cattle in the straw yard.

The quantity of surplus straw, which the culture of wheat and of beans produce, gives a great deal of refuse, even after deeply littering every branch of the stock that is housed; and this refuse is thrown from the barn into the yard, part of which is put into square boxes for the use of the cattle, and the remainder is scattered promiscuously over the dunghill.

The cattle used for this purpose, are generally of the middle sized Highland breed, and are purchased at the price of from 50s. to 4l. per head; and they yield a profit from 15s. to 25s. per head, without getting any grafs or any other food, but this refuse straw.

Lime.—Although there is certainly plenty of lime, in most parts of this county, it was long a fixed belief, that it would not answer either as a manure, or a *stimulus*, upon grounds that had been formerly limed, at any period however remote; and as all the arable land in this county had been limed, the conclusion drawn from these premises was, that it was an unnecessary and useless expence to attempt liming our ground.

A few experiments, however, which were made about 20 years ago, proved that this belief, and the conclusions resulting from it, were unfounded; and at present, the use of lime is very general.

The lime in this county is burned in draw kilns, and is sold hot, as it comes from the kiln in the interior part of the coun-

ty, where the lime rock is near to the coal, at the rate of a shilling or thirteen pence *per* boll, consisting of four firlots of the barley measure.

The price of this boll formerly was 10d., but the manufacturers of lime have raised their price with the demand.

In the eastern part of the county, where they are obliged to use water-born coal, it is sold by the wheat or small firlot, and nearly at the same price.

Forty bolls of the large firlot are reckoned a sufficient dressing for the lighter species of soil; and the allowance for the strong lands, is from 50 to 60 of these bolls. But when lime is applied to the lands in the 4th district, where it never was formerly used, from 10 to 15 bolls has been found sufficient.

Compost.—The late Lord Coalstown very successfully used compost dunghills, of two different kinds. In the one he used water fat earth, taken from a marshy piece of ground, that did not admit of draining, which he mixed with lime and dung.

On another part of his farm, where he had moss containing a small quantity of shell-marle, he mixed these also with dung.

This example has been followed only by a few; but experience has proved, that pure moss, mixed with lime, and a small quantity of dung added to this mixture, makes an excellent dressing for turnip, for wheat, or indeed for any crop.

As many parts of Scotland abound with moss, and especially the Highlands, where other artificial manures cannot be so easily commanded, it seems of national importance, that the mode of applying moss to land as a manure, should be distinctly understood. I shall therefore state my own practice for upwards of 20 years; not from supposing it the best that can be adopted, but merely with a view to inform those who, though perhaps more capable of forming it into a system, have bestowed less attention to this branch of husbandry.

The 1st process is, to mix moss and quick lime together in the *ratio* of five or six cart loads of moss to one of lime ; and in this proportion, a cart load of shells will give nearly two cart load of lime, sufficiently quick for this mixture, which is allowed to lie from 8 to 12 months ; and is turned at least twice in that period.

Dung is then added, in the *ratio* of about a fourth of the original compound. And after lying from two to three months, and being once turned after being mixed, about 30 cubic yards of it *per* acre is a full dressing for turnip, and ten cubic yards more is sufficient for a crop of wheat.

The husbandman who compounds his dung in this manner, will dress three acres for one that he can manure in the ordinary way, with pure dung ; and my experience authorises me to say, that this dressing is longer marked, in the productiveness of the subsequent crops, than an ordinary dressing of dung, at the rate of 20 cubic yards *per* acre.

Foul Marine Salt.—I have made repeated experiments, upon a small scale, of the refuse salt as a manure.

The first experiment was with the pickle, that feed wheat had been infused in, upon a small spot in the garden, and the success was very great.

The next experiment was, with the foul salt in substance ; but the quantity of caustic alkali, as I suppose, contained in it, completely destroyed every plant and seed put into that piece of ground for some months afterwards ; however, that spot became ultimately very fertile.

The third experiment was to mix it with moss, in the *ratio* of one to 10, or nearly so ; and after this mixture lay for some months, it was strowed lightly in the drill as a preparation for turnip, but hardly any of the turnip seed vegetated.

One ridge, or about the 8th part of an acre, was dressed in this manner ; and although it was only strowed in the drill, not

a weed was to be seen upon the whole of the ridge, which got no farther dressing ; and the subsequent crop was as productive as the other parts of the field, that had been dressed with compost.

As foul salt cannot be sold duty free in Scotland, as was the case lately in England, perhaps too much has been said upon the subject ; because with the duty it would be too expensive a manure. These experiments, however, seem to prove, that if we could afford to lay it upon the grounds in the autumn, its corrosive caustic powers would be exhausted, in destroying the roots and the seeds of weeds, and the fertilizing quality only would remain, when the season of sowing returns, especially if the subsequent crop shall be turnip.

Paris Plaster.—Having observed a good deal stated in the news papers, and other periodical publications, respecting the wonderful effect of Paris plaster, when used as a manure in North America, I was led to inquire whether it was used in France, and in what manner.

The information was, that the French husbandman carries it 30 miles, and uses it as a top dressing for grass ; and that, in point of quantity, it was measured in the measure for corn ; and in dressing the ground, they gave measure for measure, according to the quantity of seed.

Agreeable to these directions, I dressed a piece of new sowed grass, in the *ratio* of four firlots of our barley measure to the acre. But I could not discover the smallest effect that it produced.

Although I tried the experiment, I confess I was not much disappointed at the result, as the chemical analysis of this substance † gave very small ground to hope, that it could pro-

* The first crop was hay ; the 2d, was pasture ; and the ley plowed up, and now (March 1794) sowed with oats.

† The vitriolic acid and chalk.

duce any sensible effect upon grounds that had been previously limed, when applied, at least, in so small a quantity.

Refuse of Whale Oil.—In spring 1792, I purchased a quantity of the refuse of the whale blubber, after the oil had been extracted from it; and mixed it with my moss and lime compost, in the *ratio* of about a gallon English measure, to two cubic yards of the compost; expecting that this refuse would answer in place of the usual allowance of dung, meaning to let it lie one year for a dressing to the turnip crop of the subsequent summer (1793.) I turned however a small portion of it twice, which raised a sensible heat in it; and that same season I dressed four drills of turnip in the field, which was dressed with the usual compost of moss, lime, and dung. But the turnip crop dressed with the oil refuse, was at least 30 *per cent* inferior to the other; which led me to add about 16 cubic yards of dung for each acre that was to be dressed with the remaining quantity.

As far as one experiment can found an opinion, it would seem, that almost the whole oily animal substance had been extracted from the blubber in the process of boiling, and that the indissoluble refuse which remains is not very rich.

INSTRUMENTS OF HUSBANDRY.

The Plough.—Anciently, the old Scotch plough, worked with four horses, was the only one used in this county; a mathematical description of which will be found in Dickson's Scottish husbandry.

This plough gradually yielded to the Rotherhame chain plough, with a double curved muzzle; and of late, the plough invented by James Small, with spiral cast metal mould boards,

as corrected and improved by the Dalkeith agricultural Society, has been most generally used §.

Brake Harrow and Small ditto.—The large brake harrow, worked with two horses, is to be found on every farm in this county: it has four joints, for the purpose of making it bend, to humour and embrace the curve of the ridge; and it is successfully used in tearing up our fallows after the second furrow: And the small harrow is used after the brake, for shaking out the rooted weeds upon our fallows; for covering the seed, &c. &c.

Drill Barrows and Horse Hoes.—There are various species of drill barrows used in this county, for sowing pease, beans, and turnip, such as I suppose are used in every county that has made any progress in husbandry. But there is a recent improvement made upon the horse hoe by James Clephan, carpenter at Ninewar near Dunbar, which merits attention.

The improvement made by Clephan, is, to enable the man who works the hoe, to contract or to extend one or both sides of it at pleasure, at the instant he observes this extension or contraction necessary; and, after the necessity is over, he can with equal ease restore the hoe to its original intended width.

This is done by means of a lever fixed at each end of the hoe, which come up parallel to the stils of it, and lie upon a notched bar of iron fixed across them: and by moving one or both of these levers from one notch to another, the hoe is extended or contracted at pleasure.

PRICES OF LABOUR.

Stationary Servants Employed in Husbandry.—There are three different classes of servants employed in the husbandry of this

§ The chain of the Rotherhame plough is getting into disuse in this county; many judicious tenants think it of no advantage whatever.

county; viz. The *Hynd*, the *Cottager*, and the *unmarried Ploughman*, each of whom work a pair of horses.

Of these the *Hynd* holds the first rank; and besides working his horses, he must sow the corns in the spring, and he *stacks*, that is, he builds the ricks of corn in the harvest; he and the cottager are both married servants.

Anciently, the rent of the landlord, and the wages of the servants, were paid in *kind*; and this ancient usage continues in strict observance so far as relates to the *hynd*. He has a house found him, for which he gives a shearer, *i. e.* a reaper (generally his wife,) in harvest, and a small garden, for which he pays from two to four hens, according to the size of it. His wages for the year were formerly eight bolls of oats, two bolls of barley, and two bolls of pease; and a cow kept for him both summer and winter, the dung of which belongs to the master.

Within these few years, his wages have been encreased by an additional boll of each of those species of corn.

He has, besides, his fuel drove by his master, and some other perquisites, which make his wages amount, *communibus annis*, to about 20*l.* a year.

The *Cottager* is a mere ploughman: he has a house and garden, for which he pays the same rent as the *hynd*. His wages for the year formerly consisted of the following particulars; viz. Six and a half bolls of oat meal, at 8 stone Dutch per boll; two firlots of *Bountitb* barley for domestic use; and, from the name, it would seem to have been originally given as a donation or gratuity to his wife: two pairs of shoes, and fourpence a week for *kitchen*, a Roman custom, the meaning of which is sufficiently obvious, although the allowance may seem wonderfully moderate indeed; and, *lastly*, his wages in money was about 4*l.* a year.

Over and above these allowances, in order to invite the cottager and his family to be careful in collecting dung, he is

allowed the first crop from all the dung he gathers within the year.

The master leads it out, and lays it upon a piece of ground, (probably not the richest in the farm,) at the rate generally of 50 double carts per acre.

The ground is ploughed and harrowed, the cottager finds the seed and reapes it, and the master leads home the crop.

This usage, although not altogether confined to this county, is by no means general over Scotland; and notwithstanding that it may perhaps be attended with some inconveniences, the advantages resulting from this creation of dung, do greatly overbalance them; and I am satisfied, that a considerable extent of ground is annually manured in this county, by what we call the *cottar dung*.

At present the cottager retains his meal, and the produce of his dung; and he receives from 8*l.* to 10*l.* a year, which, with some other perquisites, bring his wages nearly as high as those of the hynd.

Both the hynd and the cottager were accustomed to get the sowing of one peck of lint seed upon a corner of the fallow; and their wives gave, respectively, three days of skutching of lint, and six days for spinning of wool upon the large wheel, to the wife of their master; during these days, they were maintained in his family.

This service has gone into general disuse; and the sowing of lint is a pernicious custom, for it robs the ground, and, at the same time, it deprives it of the most material advantages resulting from the fallow.

The unmarried servant generally eats in the house of his master, and sleeps in the stable; and his wages are about 8*l.* a year, and two pair of shoes.

Formerly the food of these servants consisted in oat-meal pottage and milk, morning and evening; and for dinner there was a rotation, for each day of the week, Sunday excepted, consisting of butter and eggs one day, herrings and milk ano-

ther, cheese and vegetables, &c. ; and on Sunday they were regaled with broth made of vegetables and salted beef.

At present, they have animal food for dinner three times a week in summer, and four times in winter.

Formerly, the blacksmith and the carpenter were paid also in kind, at a given allowance for each plough. But lately, since their work has become more various and complicated, they are now paid partly, at least, in money.

Female Servants.—The female servants formerly received only a small portion of their wages in money ; they were paid in fungibles ; such as cloth of different species, suited partly for their wearing apparel, and partly intended for what we call their *providing*, when they came to be married, such as blankets, &c. ; and it is the universal practice at this day, that the wife finds beds, sheets, and blankets, and the husband the fixed furniture.

The present wages of the domestic female servants, in the families of the husbandman, may be taken from 3*l.* to 3*l.* 10*s.* a year, with the sowing of $\frac{1}{2}$ peck of lintseed, and two pair of shoes.

If I might be permitted to offer an opinion, upon the ancient and modern mode of paying our servants employed in husbandry, I would humbly suggest, that we should be cautious in converting the payments in kind, that is, fungibles, into money ; for although the latter perhaps may prove an accommodation to the master in one view, it may probably injure him in another, and a more essential particular.

The servants engaged in husbandry do not reside in towns ; consequently they are somewhat remote from market ; it must therefore be very convenient for them, to have the principal articles of their food found to their hand ; and the more seldom either the cottager or his wife have occasion to go to market, the better it will be for their own families, and ultimately for their master.

Independent of the time consumed in the going to, and in returning from the market, they cannot meet an acquaintance there, without some expence in the ale-house, or what of late has become a general and a worse practice, the whisky shop. Besides, when their food is found progressively, as they have occasion for it, every member of the family will be regularly and comfortably fed with wholesome victuals; and the price of food, whether high or low, will make very little difference to these servants, and the cry of want can never be heard.

If money was to be given, and if, unfortunately, either the wife or the husband should not be sufficiently attentive in making the proper provision of food, it is easy for them to waste and squander their wages, long before the return of the next term. But it is difficult to convert food into money for that purpose; there are many, who, from thoughtlessness, are capable of squandering their money upon trifles, who would shudder at the idea of converting food into money for that purpose.

The husbandry servants in this county are now, and always have been, healthy, temperate in their living, quiet and peaceable in their dispositions; obedient and not unwilling to work, and let us consider well, before we make any alteration in our system, that may have the smallest tendency to create a change in these dispositions of mind, or in those habits of life, which hitherto have rendered that class of people so easy and contented in themselves, and so comfortable to every person connected with them.

I shall conclude the account of the wages of the stationary husbandry servants in this county, with the following excerpt from the London magazine, for the month of May 1732, as tending to give a comparative view of the former and the present value of labour in the two counties therein mentioned, when the Report of the rural economy of these counties comes before the Honourable Board, as far as money, which is unquestionably the most fluctuating of all *media*, can ascertain that comparative value.

“ Yearly wages appointed by the justices to be taken by
 “ the servants in the county of Kent, not exceeding the fol-
 “ lowing sums, viz.

“ Head plowman, waggoner, or sledsman,	L. 8	0	0
“ His mate, - - -	4	0	0
“ Best woman servant, - - -	3	0	0
“ Second sort, - - -	2	0	0
“ Second ploughman, - - -	6	0	0
“ His mate, - - -	3	0	0
“ Labourers by the day, in summer,	0	1	2
- - - in winter,	0	1	0

“ *By the justices of Gloucestershire.*

“ Head servant in husbandry, -	5	0	0
“ Second servant, - - -	4	0	0
“ Driving boy under 14, - - -	1	0	0
“ Head maid servant in dairy and cook,	2	10	0
“ Second maid servant, - - -	2	0	0
“ Mower in hay harvest without drink, per day. - - -	0	1	2
“ _____ with drink,	0	1	0
“ Mower and reaper in corn harvest with drink only, per day, - - -	8	0	0
“ _____ with diet per day,	0	0	4
“ _____ without diet or drink,	0	0	10
“ Carpenter, wheelwright, and mason, with- out drink, - - -	0	1	2
“ _____ with drink,”	0	1	0

Wages of a Day Labourer.—It is within my memory, since the wages of day labourers were 5d. per day, from the 1st of November, to the first of February; and 6d. from February to November, with the exception of harvest.

At present, these wages may be taken from 10d. to 1s. 6d. But the labourers, in many parts of the county, rather wish to contract by the piece, and the most industrious are always the most forward to make such a contract; it is unquestionably the best way for both parties, as the greatest industry and the greatest exertion is then best paid; or, to speak more properly, the payment is always in the *ratio* of the industry of the labourer; and the husbandman has only to take care, that the work shall be performed agreeable to the fair *bona fides* of the covenant.

Hay Harvest.—The labourers employed in mowing the hay are sometimes paid by the day, and sometimes they are engaged by the piece, that is, so much per acre; in the former case, they have from 1s. 8d. to 2s. per day, and they find their own drink; in the latter case, the price of cutting per acre varies according to the weight of the crop, from 1s. 8d. to 2s. 6d.; and there are some labourers, who contract for both the cutting and the winning of the hay, and the price is from 3s. 4d. to 3s. 8d. per acre.

Corn Harvest.—In harvest time, every man, whatever trade he may follow, takes a sickle in his hand; and as every house connected with husbandry, and indeed every house, except those in towns or villages, are in general rented under the covenant of the householder finding a shearer or reaper in harvest, every woman almost becomes a reaper.

Independent, however, of this, there are a considerable number of Highlanders, and persons from different parts of Scotland, who resort to this county as reapers in harvest; and there are two markets for reapers; viz. one at Linton, in the eastern part of the county; and one at Tranent, in the West, which hold every monday morning during the harvest, and begin about sun-rise.

The reapers are hired for the week; and there are general-

ly, at each of these markets, from 800 to 1000 reapers during the press of harvest.

The husbandman feeds every reaper, and indeed every servant belonging to his farm, during that period; and since the drill husbandry became general, the stationary servants who work the horses, are commonly kept at the plough, during the reaping season. But still they are fed, as their wives are supposed to be in the field.

I remember the wages of the reapers from 4d. to 8d.; now they run generally from 9d. to 1s. 6d.; and, excepting when there is a very great demand, the female reapers have generally about 1d. per day less than the men.

Farm Stock.—About 40 years ago, every plough was wrought with four horses, the crop was carried to market upon the backs of these horses, and carts were used only for the purpose of leading out dung, and driving some long carriages in summer.

At this period, little attention was paid to the weight or power of the horses employed in husbandry; because four even weak horses, were sufficient for the work of the plough, and one of these horses could also carry to market upon his back 6 firlots of wheat or pease, or a boll of barley, or five firlots of oats. But, progressively as three horses came to be used in the plough, in place of four; and latterly, only two horses, which is the present practice, the attention to the weight or power of the horse, has kept pace with these progressive changes.

It happened, however, unfortunately, that when a spirit for breeding a better species of horses first arose in this county, most of the breeders had their mares covered with blood hor-

ies, which by no means answered the purposes they were intended for ; and, from that extreme, they run into the opposite one of breeding out of the large black horse, of the Bakewell race.

This animal is of great power and weight, but very slow in his motions.

Of late, this system has been so far changed, that the stallions mostly used now, are the strong fox-hunter ; and the great object in breeding at present, is, to have horses with some blood, and a great deal of bone. But we are still so far behind in the article of breeding horses, that I speak within bounds, when I, say that every fifth horse in the county is imported ; and there are several very intelligent farmers in the two lower districts, who entertain the opinion, that it is less expensive to buy a horse when wanted, than to breed to supply the natural decay of that branch of their stock.

Black Cattle.—The same observation applies to black cattle, with this difference, that still less attention is paid to the breed.

Sir David Kinloch of Gilmerton is almost the only person in the county, who has for many years attended to this branch of Husbandry ; and he breeds annually a few heavy cattle, which are of the Dutch, or what we formerly called the *Holendernefs* breed.

A cross of this breed has in a great measure annihilated the ancient breed of milk cows in this county, which were small, that is, they fed to 20 or 25 stone Dutch, when fatted for the butcher, and were of a black or a deep brown colour, with a rough strong coat.

The cross breed are better milchers than the ancient breed ; but they are neither so handsome nor so hardy ; every tenant, however, rears from a half to a third of the calves that are produced by the cows he keeps for the supply of his family with milk and butter.

Sheep.—It is within my memory, since there were several sheep walks in every parish, (with a very few exceptions,) even in the low part of the county: But progressively as a spirit of agriculture encreased, and while the object was to make every acre a corn field, most of these walks have been plowed up, and the sheep banished.

The breed of sheep, even at that early period, were of the white faced kind; and generally, I believe, the long wooled sheep of Lincolnshire; of late, however, a few of our tenants have again returned to sheep as a branch of husbandry; and at present we have some flocks that would stand an examination, in most of their *points*, by the critical eye of the Northumberland or Teeswater breeders *. But, in my humble opinion, the farms in the low district, and generally also in the middle district, are too limited in point of extent, to admit of that mixed system of husbandry, which unites the plough with a breeding stock.

The farms in these districts may allow the tenant to keep a flying stock of sheep, and of cattle; that is, to buy and sell off within the year, or in the course of 18 months; and perhaps more corn would be produced, if one or two years more of pasture were introduced into the rotation of crops.

* Mr Sheriff, tenant in Captainhead, has furnished me with the following particulars of a sheep of his breeding, that was killed at Haddington in Autumn 1791, at the age of $2\frac{1}{2}$ years old.

	lb.
Live weight, at 16 oz. to the lb.	295
Carcase, including kidney fat,	193
Tallow, exclusive of kidney fat,	30
Wool,	17
	<hr/> 240

There remains, of course, for the head, the feet, the hyde, and the other offals, .55

The fat immediately behind his fore leg, was 5 inches streight over; and $4\frac{1}{2}$ inches on the rib. This sheep was remarkably small boned for his weight. Mr Sherriff has raised a breed for himself, suited to his pasture, out of a crop from the Bakewell sheep.

Sheep Husbandry in the High District.—Before going up to the mountains, it may be proper to take some notice of the sheep husbandry upon those farms that lie at the bottom of these mountains, and are of a mixed nature, consisting partly of hill, and partly of dale; of these one example will suffice.

The farm of Longyester, upon the Tweeddale estate, was for many years possessed by the late Charles Hay, Esq; of Hopes; and, since his death, it continued, down to Whitfunday 1792, in the occupation of his son Mr Hay now of Hopes.

This farm is partly hill and partly dale, and contains nearly 1000 acres, of which one third lies at the bottom of the hills.

The soil of this part is light and dry, and adapted to the clover and turnip husbandry; it was all inclosed and limed by the Messrs Hay.

The hill ground is also of a light soil, and a considerable part of it has been limed, fallowed for turnip, which were eat off with sheep, and grafs seeds sowed with the first crop.

Under the management of the Messrs Hay, the stock of sheep kept by them was of the black faced, or Tweeddale breed, of the best kind; and upon this pasture they encreased considerably. The wedders, when full fed, would some of them have weighed 18 lb. Dutch per quarter.

At Whitfunday 1792, the present Mr Hay sublet this farm to two brothers, Messrs James and Thomas Stevensons from Northumberland, who are throughly acquainted with the management of a breeding farm, and particularly with the Cheviot breed of sheep.

Mr Hay informs, that when he saw this breed of sheep brought upon these farms, he entertained considerable doubt of the success of the experiment; and fortunately an opportunity soon offered, of seeing a correct comparative trial betwixt them and the black faced sheep.

Mr Hay's principal shepherd, and who had been long with him, was continued upon the farm by the Messrs Stevenson; and he kept his own stock of the black faced breed ‡.

In autumn 1792, when the season for laying sheep had arrived, it was found that the Cheviot sheep had throve remarkably well, and were, in general, in better order than the black faced sheep belonging to the shepherd.

2dly, The ewes and the lambs that had been fed in the best pastures, although the pasture was apparently very bare, were found to be very fat; and a much greater number of them than of the black faced ewes, had twins.

3dly, Upon inquiry, Mr Hay found, that the Messrs Stevenson had a greater number of sheep and of black cattle upon this farm than ever he had kept.

4thly, The wool of the Cheviot breed sells from 19 s. to 20 s. per stone; and Mr Hay used to sell the wool of his black faced sheep, from 8 s. to 10 s. per stone only; and he adds, that from his granting permits, as a Justice of the Peace, for the transport of the wool of the Messrs Stevensons, he finds, that they have cut, upon the whole, a third more wool from their stock than his black faced kind ever yielded.

They generally cut from 2 s. 6d. to 3 s. worth of wool from each sheep of their feeding flock; and their feeding wedders, give from 4 s. to 4 s. 10d. worth of wool each.

The wool of the Cheviot breed has increased in quantity, and improved in quality upon this farm; and last year the Stevensons offered a competition with the best Northumberland wool from that breed.

The mode practised by the Messrs Stevensons, in *laying* their sheep, is, by a mixture of 8 pounds (of 22 ounces) of butter to a Scotch pint, (fully two English quarts) of tar.

The Messrs Stevensons never milk their ewes after weaning the lambs: 2dly, They never *fold* them: 3dly, They have

‡ The wages of every shepherd consists of so many sheep, which pasture along with the flock of his master.

sowed out the whole of the hill pasture ; and it is no part of their plan ever to have any part of it in tillage. In short, they never suffer the sheep to be disturbed, or in the smallest degree restrained in travelling over their pasture.

Mr Hay adds, that as to the weight of the carcase, he finds very little difference betwixt those of the Cheviot breed, and of his own black faced breed.

The Messrs Stevensons have lately taken a new farm, called *Lammerlaw* ; which is the highest hill in this county, and is entirely covered with heath ; upon this farm they have also introduced the Cheviot breed ; and, so far as their short experience goes, they say, they have reason to expect they will thrive even on that high ground. But they add more tar to the mixture for the laying of the sheep kept upon these high grounds.

The up-land district of Lammermoor, consists of hill and dale, interspersed occasionally with large flat and wet moor, particularly towards the western boundary of this county.

The vales are narrow, but the soil is light and kindly ; and they are generally kept under the culture of the plough.

The soil of the hills, is dry and moorish, and covered with a moss of about an inch thick ; which encreases in thickness progressively with the ascent of the hill.

Mr Hay has furnished me with the following account of the management of the sheep in this district, which, at present, are, with very few exceptions, of the black faced breed.

“ All store farmers of any extent keep two flocks ; viz. one
 “ of ewes, and another of yeld sheep ; and this flock they
 “ sometimes divide, and have a flock of what is called *hogs* ;
 “ that is, lambs one year old.

“ The common practice is to fold the ewes upon a break of
 “ arable lands during the summer ; they cut the lambs about
 “ the 26th of May, and they wean them in the first week of
 “ July ; and then they shear the whole flock.

“ The lambs, after weaning, are sent to a healthy pasture,
 “ called the *birn*, which has been kept for them, where they
 “ remain until the end of August, when they are moved down
 “ to the best low pasture, called the *bog-fence*, which has been
 “ saved from the weaning, and here they remain during the
 “ winter.

“ The ewes are milked for about eight weeks after the
 “ weaning, and sometimes longer; and then they are put out
 “ with the lambs into the *bog-fence*, for the winter.

“ All the sheep are *sineared*, *i. e.* salved, immediately after
 “ the harvest, at the rate of two pounds Tron weight of but-
 “ ter to a Scotch pint of tar, which salves from 6 to 8 sheep,
 “ at the expence of about 5d.

“ The wool sells from 5s. to 8s. per stone, Tron weight;
 “ and it usually takes from six to eight fleeces to a stone; so,
 “ deducting the expence of salving, the nett proportion upon
 “ the wool, may amount from 8d. to 10d. per head, some-
 “ times a little more or less, varying according to the price of
 “ wool.

“ Upon dry heathy grounds the ewes are drafted and sold
 “ to graziers, in the month of March, at a price from 10s. to
 “ 12s. per head; but, upon wet grounds, which are dangerous
 “ and subject to the distemper called the *rot*, they are draft-
 “ ed and sold in October at a much lower price.

“ Five store-masters (*i. e.* tenants) in Lammermoor, breed as
 “ many sheep as keep up their stock; so they have to buy
 “ yearly a parcel of hogs, which are mostly wedders.

“ Linton in Tweeddale is the great market for these wed-
 “ der hogs; and the price is from 7s. to 10s.

“ These wedders they keep for two years, and sell them to
 “ the feeders, from 10s. to 14s. which yields an yearly gross
 “ profit of 1s. 6d. to 2s. per head, independent of the value
 “ of the wool; but this profit suffers a deduction for the in-
 “ terest or out-lay of the price; and, *secondly*, an average al-

“ lowance for the loss of sheep, which in some years is very
“ considerable.

“ Some of the most judicious store masters have totally
“ given up the practice of milking the ewes, after weaning ;
“ and others milk for a shorter space than formerly ; and
“ they now allow the lambs to suck longer, which considera-
“ bly encreases their bone, and is thought not so pernicious to
“ the ewe as the milking.

“ The method of managing the arable land in this district,
“ has been changed much for the better within these few
“ years ; when in grass it is folded, and when taken up, it
“ gives three crops ; and is then fallowed, and sowed out, the
“ first crop with grass seeds ; and they generally follow the
“ same practice, with the new grounds taken in by fallow and
“ lime ; which has now become a general practice through
“ Lammermoor ; and lime, when applied to dry ground, is
“ certain of making a lasting improvement upon the grass ;
“ which is, and always ought to be, the great object upon
“ store farms. ||

Food of the Common People.—Formerly the common people were fed mostly upon vegetables ; but the mode of living has been of late considerably changed for the better.

In general they use porridge made of oat meal for breakfast and supper ; their bread is a mixture of pease and barley grinded together ; they have all the common species of pot herbs in their gardens ; and of late, potatoes have been intro-

|| Sundry of these store masters have raised turnip very successfully, which are particularly useful for their ewes and lambs in the spring ; and in order to keep their sheep upon this feed as long as possible, some experiments have been made, to raise turnip for two years upon the same field ; and by eating of the turnip of the second year first, they get that ground prepared for barley (rather big,) in the proper season, while the turnip of the first year is saved ; and as it is to be again turnip, they let their sheep pasture upon it till the grass is up ; this experiment has been found to answer ; and the turnip, the second year, without dung, are as good as the first crop with dung.

duced. From August to the end of May, this plant forms one third of the vegetable food of the common people ; they are boiled every morning, and the children have them always at command.

Every cottager also feeds one or two hogs, which he cures in the autumn, and lays it up for his winter and spring food ; they use likewise a good deal of *fuet*, that is, sheep tallow refined ; and with it they stew their potatoes and other vegetables.

Almost every one of these cottagers has from one 8th to one 16th of an acre in potatoes, for which he pays at the rate of five guineas per acre ; the ground is twice plowed, and he finds the seed and subsequent labour.

It is not uncommon, likewise, for those cottagers, who have not a right to the maintenance of a cow, as part of their wages, to pay as high as 4l. for the pasture of a cow.



HAVING thus detailed, and perhaps with a degree of minuteness, which I trust will not appear to the reader entirely unnecessary, the ancient and the modern state of agriculture in this county, and the several particulars relating thereto ; I shall conclude this Branch with a few general observations, with regard to the burdens peculiarly affecting the tenants ; the actual size or content of farms in the county, and what may be considered a proper size for a corn farm, and the nature or species of rent to be paid for it ; and the influence of large farms as to population ; the duration of leases, and the covenants betwixt landlord and tenant.

Burdens affecting the Tenants.—The landlord, universally over the whole of this county, pays the land tax, and the stipend

or salary to the established clergy of the church of Scotland; and the only burdens the tenant is by law subjected to, are these following :

1st, *Schoolmaster's Salary*.—The half of the salary to the schoolmaster. But as the total salary is limited by statute, to 200 merks, (11l. 2s. 2½d. for a parish) this sum, when divided betwixt the landlords and the tenants of a whole parish, is too trifling to be mentioned.

2dly, *Poor's Rate*.—The poor's rate, in parishes where there are towns or large villages, may amount to about 3 *per cent* of the real rent, or perhaps to a trifle more; the one half of which is paid by the tenant, and the other half by the landlord. But in what may be called the country parishes, a rate for the support of the poor is only occasionally necessary; and the sum imposed is so trifling, that this burden also may be laid out of consideration.

3dly, *Highway Money*.—The highway money, at the rate of 20s. for every plough, will not, I should suppose, much exceed one and $\frac{1}{4}$ *per cent*. But this shall be more fully illustrated under the head of Roads.

Thirlage.—Although this burden never was severely felt in this country, and is now mostly done away; yet, as it is one of the points in rural Oeconomy, which the Honourable Board desire information upon, I shall endeavour shortly to explain the nature and origin of thirlage; and the present state of it in Scotland at large; and I undertake this task the more willingly, as, professionally, I have had frequent opportunities of considering it.

In former times, corn was reduced into meal, in Scotland, as in ancient Rome ‡, by a hand mill, which was called a *quern*.

‡ Among the Romans, the bakers were the millers; and this class of citizens seems to have been reduced to a state of bondage; for a baker was prohibited.

I will not venture to say, that *quern* is derived from *Quirinus*; but if the Romans instructed our rude forefathers in the raising of corn, which I have already endeavoured to prove, it seems highly probable, that they would teach us also how to manufacture that corn; and I have been positively assured, that the *quern*, or hand mill, for the grinding of oats into meal, was used in the remote parts of the Highlands of Scotland, long after the year 1745.

It is certain, however, that the water machine called the mill, for the grinding of oats into meal, is of high antiquity in Scotland; and as it was introduced before the period of record, it may be fairly said, *caput inter nubila condit*. But from the ancient name of one of the duties, *knaveſhip*, which in the sequel shall be explained, the mill would seem to be of Saxon original.

Rude and primitive as the machinery of the oat mill may now seem it must have appeared a wonderful piece of mechanism in those rude and barbarous times, when it was first brought into Scotland; and as the labour and fatigue of grinding by a hand mill, must certainly have been very great, as well as tedious, it is by no means surprising, that the proprietor of a water mill, which performed the work with so much ease and expedition, and so much more effectually, should receive a high premium from the persons who frequented his mill.

It seems also natural, that a person who possessed a stream of water upon his estate, should be invited by his neighbours

C c

under the severest penalties, from changing his profession. *Vide* the various titles in the Roman code *de Piſtoribus*. And when a slave committed a great fault, it was not uncommon to send him to the bakers (Terent. Andr.) *Te in piſtrinum, ave, dedam, uſque ad necem*; and Cicero (*De Orat.*) in speaking to Crassus, and desirous of giving him an idea of a very fatiguing business, says, *Tibi mecum erit, in eodem piſtrino vivendum*.

to be at the expence of erecting a mill upon this stream; and that they, on the other hand, should *thirle*, that is, astrict and bind their lands, in all time coming, to use and frequent this mill with their corns, and to pay a certain proportion of the meal, (according to the universal mode then practised, of paying in kind) for the grinding of it.

Progressively as the distress and fatigue of the hand mill came to be forgot, and the machinery of the water mill, and the trifling expence attending the erection of it, came to be better known, the heavy duty paid at the original mills, and which the antecedent covenant of *thirle* or restriction, had rendered permanent, would be more severely felt; and now that the memory of the hand mills is totally effaced, these original *thirle* duties are considered a real grievance.

Anciently, there is reason to believe, the mills were at first erected upon ecclesiastical lands, and belonged to the clergy.

There are three different species of this servitude known and acknowledged in the law of Scotland; of these, only two belong to rural Oeconomy; in order, however, that the subject may be thoroughly understood, all the three shall be shortly explained.

The *first* and the lightest species of thirlage, is called the *thirlage of grindable grain*; and it means, that the tenants and possessors of the astricted lands, (in our law, the *servient tenement*) shall be obliged to resort to the mill (the *dominant tenement*), to which these lands have been astricted, with all the oats and barley they shall use for food, and there pay certain dues for the grinding.

The *2d*, and the oppressive thirlage, is called the *thirlage of growing corn*.

By this covenant of thirlage, every ounce of corn produced upon the servient lands, let the quantity be ever so great, must

be brought to the dominant mill, and there manufactured into meal ; and the covenanted or accustomed duties paid.

The only limitation that this severe thirlage admits of, is in favour of seed and of horse corn.

Sometimes a special covenant is made, by which the possessors of the servient lands, pay what is called *dry multure* ; that is, they pay a quantity of corn, to purchase the freedom of going to market with the remainder in the same state ; and where constant immemorial usage shall have sanctioned this custom, the courts of law generally so far mitigate the severity of this species of thirlage, as to find, that the proprietor of the dominant mill can demand no more than that quantity of *dry multure*, which the immemorial usage has established.

These decisions are grounded upon the principle of a presumed contract, of which the record or memory has been lost betwixt these parties, whereby the one agreed to pay, and the other to receive the commutation fixed by the usage.

The 3^d and last species of thirlage, is called the thirlage of *inveſta et illata*, and belongs properly to *urban* tenements ; the meaning of it is, that corn, wherever produced, if brought for consumption within the boundaries of the dominant mill, must be carried to this mill and manufactured there, and pay the accustomed duties.

This species of thirlage exists in most of the boroughs in Scotland ; and the mill generally belongs to the incorporation, where the borough holds directly of the Crown, or what we call royal boroughs. But where a borough holds of a subject superior, (the lord of the manor,) the mill generally belongs to the superior, and the accustomed duties are paid to him, or to his tenant in the mill.

It is to be observed, that in all these thirlages, it is the land of the servient tenement that is bound ; and although it should pass by purchase through 20 different hands, every pur-

chafer, and all his people upon these lands, are equally bound to frequent the dominant mill.

There are three different species of duties paid at the dominant mill; viz, 1st, The *multure* (*multura*, grinding;) 2^{dly}, The *bannock* (the loaf;) and, 3^{dly}, The *knaveship*.

The 1st of these duties belongs to the heritor and proprietor of the mill; and seems evidently to have been the fine, or *premium* originally settled, as the inducement for his being at the expence of erecting the mill; and for supporting the machinery of it in future.

The *bannock* is the duty paid to the miller, and the *knaveship* is the duty paid to the under servants in the mill.

The quantity of meal paid under the name of *multure*, varies considerably in different counties, and even at different mills. I have had an opportunity of knowing it as high as the eleventh boll, and sometimes as low as the 2^d boll. And, in one particular case, so low as the 1²d. But it may be taken, upon an average, nearly at the 1⁷th boll.

The other duties are also various; but they may be taken jointly as equal to the half, or from that to 3⁴ths of the *multure*.

Independent altogether of these several duties, the possessors of the servient tenement are bound to perform certain personal services to the mill and its appendages. For example, when the dam dyke, or the rampart that directs the stream of water from the river to the mill, wants repair, or when the aqueducts to and from the mill require to be scoured, the people of the servient tenement must turn out and perform these works. When the roof of the house in which the mill stands decays, they must find thatch for making that repair; and they must put it on. When grind-stones are wanted, or an axle, or any other part of the machinery that requires a heavy carriage, they must go with their horses and carriages to the nearest

place (whatever may be the distance) to bring these articles to the mill.

The thirlage of *growing corns* is unquestionably a heavy grievance, as it must operate in one of two ways, either of which seem impolitic, and, with submission, unjust.

If it shall operate as a bar to the improvement of agriculture,—and the extent of the tax paid to the dominant mill may produce this effect,—it is evidently impolitic.

If, on the other hand, the lands of the servient tenement shall be improved and cultivated, it seems unjust, that the proprietor of the dominant tenement should have a power to impose so heavy a tax upon the industry of the cultivators of the servient tenement, especially as he gives no equivalent for this tax.

This species of thirlage never was known in this county ; or at least, if it was, it has been long since forgot ; there is another circumstance peculiarly fortunate, which has put it in the power of most of the landed proprietors of the county, without difficulty, to emancipate their tenants from the thirlage even of *grindable grain* ; viz. That the landlord, almost universally, is proprietor, both of the dominant and of the servient tenement ; and as he restricted his tenants to his own mill, by a covenant in the lease, progressively as the leases of the mills have expired, the landlords in general have emancipated their tenants from every species of thirlage, at a conversion of twenty shillings per plough, which is paid by the tenant ; and he and his servants are left at perfect freedom to resort to any mill where they can get their work best done, and at the lowest rate.

The case, however, is widely different in many parts of the North of Scotland ; and I know, from the cause already mentioned, that there are many estates, or *servient tenements*, belonging to one proprietor, which are restricted to mills, or the *dominant tenements*, belonging to another proprietor ; and not a few of these thirlages are the severe one of *growing corns*.

It seems unnecessary, for the present purpose, to enquire, Whether these mills were originally erected by the clergy; and, since the reformation in religion, have now passed into the hands of laymen? Or whether, perhaps, if mills are truly of Saxon origin, they were generally, and at once introduced into this county when under the Saxons, who certainly were a more enlightened people than the Scottish and Pictish inhabitants of the North, whose ignorance, of course, may have led them more generally to subject themselves in the servitude of thirlage; to invite their clergy, or a few of the more opulent among them, to undertake the arduous task of erecting mills?

From the near analogy betwixt tithes and thirlage, it has always appeared to me a matter of just surprise, that the Parliament of Scotland, which, in the course of the last century, first authorised the valuing of tithes, for the purpose of establishing a *modus* of payment; and afterwards compelled the lay titulars, (proprietors,) to sell their tithes at nine, and in some cases at six years purchase to the proprietors of the lands, did not introduce a fixed *modus* for thirlage, which certainly operates like tithes, as a tax upon industry, to bar, or at least to retard agricultural improvement.

Having thus given a general history of thirlage, and the present state of it in Scotland, I shall leave it, as becomes me, in the hands of the Honourable Board of Agriculture, and internal improvement, to dispose of the matter as to them shall seem proper*. I shall now again return to the county of East Lo-

* If it shall be thought necessary or expedient, to afford any relief to the proprietors of the *servient* tenements, perhaps an itinerant commission would be the most expeditious and at the same time the least expensive mode of adjusting the extent of the fair claims of the proprietor of the *dominant* tenement, which certainly must be attended to; and for ascertaining the value to be paid annually, or the price that the proprietor of the *servient* tenement shall pay for a complete discharge of the servitude.

thian; and having discussed the burdens peculiarly affecting the tenants in their character as husbandmen, I shall proceed to state the actual size or content of the farms in this county; and submit a few observations upon what occurs to be the proper medium size of a corn farm.

Size of Farms.—In the low district of this county, where the lands have been long cultivated, there are few farms that exceed 200 acres, except where there has been some moor or meadow ground connected with these farms §.

I remember many farms in this district of much smaller content; and, 40 years ago, many tenants would have taken a farm under a hundred acres, rather than have engaged with one of greater extent. But now, that our tenants are become in general more wealthy, it seems to be a practice just commencing, to encrease the size of farms, in this, and in every other district; but the present average size may be taken, as I have already said, at 150 acres.

The farms, in the middle district, may be averaged at about 250; and, in the upper district, their extent may be averaged from 300 to 400 acres. But, where the farms in this last district stretch over the hills, and include a considerable extent of pasture, which many of them do, several hundred acres of hill ground may be added to this average.

How far either of these several sizes gives the just *medium* content that a corn farm should consist of, seems naturally to run into the second point: viz. to enquire, What number of acres of arable land a corn farm ought to consist of?

The 1st statement of this question proves it to be a general, abstract, and a theoretical proposition, embracing a great variety of complicated, and, perhaps, discordant principles, which, I am fearful, it much exceeds my capacity to combine pro-

§ Particular instances of larger farms, in this district, might be condescended upon.

perly together. But since the Honourable Board have required an opinion upon this subject, in obedience to their injunctions, I shall state what has occurred to me upon a subject, I confess, of general national importance.

Before entering upon the question itself, it may be proper to lay down certain axioms, which, if conceded, will tend to simplify, and may, perhaps, in the end, shorten and facilitate the discussion.

The 1st axiom I assume, is, That that size, or content of a corn farm, is the most proper, which sends the greatest quantity of corn to market at the least possible expence.

If, by improvements in machinery, or by greater exertions of industry; or if, from a more thorough knowledge of the degree of power that men and horses are capable of exerting in the culture of land,—some hands, formerly kept upon a farm, shall now be rendered unnecessary, I trust the husbandman will not be debarred from embracing these improvements, for the purpose of keeping one or more useless people upon his farm, merely to preserve a population to him, not only superfluous, but expensive.

For example :—40 years ago, every plough was worked with four horses and two men, or, at least, a man and a boy; whereas, at present, universally over this county, every plough is worked by one man and two horses, without a driver; and, according to the best of my observation, the man and the two horses do as much work now, as the two men and the four horses formerly did.

This saving in the expence of husbandry was not to be denied the husbandman, because it might have effected the general population of the kingdom; in the sequel, however, I shall show that this alteration has not lessened the population, and that other exertions of industry have not only directed the saving of labour in one line, into a different channel, but have increased the demand for people.

Having thus endeavoured to illustrate the 1st axiom, I shall proceed to the 2^d; and, let it be supposed that a tenant, or, to use the language of the statute book, the husbandman, shall be possessed of industry, of skill, and of stock, to manage a farm of a given content:—Is it just, with regard to him, as an individual; or, is it wise and politic for the State, that the genius of this man should be cramped, and a part of his stock misapplied, or at least, *quoad* him, not so usefully applied, by cutting off the half of his farm, merely for the purpose of having two husbandmen established upon the same extent of ground, in place of one?

Before answering this question, let it be remembered, that the influence upon general population is reserved, even if the answer shall be negative, which I trust it will.

There is a modification, however, of the affirmative answer, which comes under the 3^d axiom; viz. That no farm should be so extensive as to induce the husbandman to adopt a particular mode of culture upon any part of that farm, less suited to the nature of the soil, and less productive; merely because it lies too remote from the dung yard, to receive its just proportion of dung, and, upon that account, to borrow the expression of Pliny, in place of *fimo agrum laetificans*, the husbandman keeps this portion, like the out-field of former times, in a slavish and sluggish state of bondage to the other parts of his farm.

These propositions being granted, I shall offer my opinion upon the subject, in very few words, by supposing a farm to contain a square mile, and that the house and offices shall be placed in the centre; it follows, as a necessary consequence, that the most remote part of the farm, in every possible direction, cannot exceed the half of that mile.

If the calculation be just, which states that horses, in going two yokings in the plough, travel loaded about 14 miles in the

day ;—it seems obvious, that 12 double carts of dung can be carried by 2 horses to the extreme point of the farm, in a day, which proves sufficiently that no part of this farm is too remote from the dung or the stack-yard.

A square mile contains about 500 acres Scotch measure ; and where the stock, the industry, and the skill of the husbandman, do all combine in rendering him equal to the management of a farm of that extent, it is my humble opinion the farm ought not to be less.

Size of the Inclosures.—I have long entertained this clear and decided opinion, as to the size of inclosures ; viz. That the size of every inclosure should be relative, and corresponding exactly to the size of the farm ; and the relative proportion must be governed by what the husbandman can manure (either for turnip or black fallow, according to the quality of the soil) in one season.

If this proportion shall be preserved, every inclosure can be sowed out with one species of corn, and in one condition ; when I see different species of corn growing in one inclosure, I conclude, either that the inclosure is out of proportion to the farm, or that the husbandman is not thorough master of his business.

Every person, possessed even of a moderate knowledge of practical husbandry, must have observed, that when an inclosure is sowed out in different seasons ; or, although sown out in one season, if one part of the field shall be more remote from the fallow than the other ; the grass feeds thrive best nearest the fallow crop ; and when the field comes to be pastured, the cattle are fondest of it.

Influence of Large Farms upon Population.—The axioms, that I trust, have been already established, tend so far to clear the ground upon the general question,—How far *large farms* affect population ?

Before, however, proceeding further upon this point, it is

necessary to explain a few terms, that the argument may be rightly understood.

With this view, it will be proper to ascertain correctly what is meant by the first branch of the question, *A large farm.*

I shall lay entirely out of the case, a supposition of a husbandman, with a stock and industry equal to 200 acres only, becoming the lessee of a farm of 500 acres.

2dly, Let it be understood that the husbandman, who takes the large sum, is not to change his system, so as to turn it from a corn farm to a sheep walk.

If this shall be the object, I mean not to question any one circumstance, however melancholy, that Dr Goldsmith has so pathetically described, in his beautiful poem of the Deserted Village: on the contrary, I shall prove, by an act of Parliament, which the Doctor probably never perused, that the scenes his animated and poetic fancy have pictured, are much short of the truth.

This statute, and title of it, are in these words: * —“ The
“ penalty for decaying of houses of husbandry, or not laying
“ of convenient land for the maintenance of the same.”

“ *Item,*—The King, our Sovereigne Lord, having a singular pleasure, above all things, to avoide such enormities
“ and mischiefes, as be hurtful and prejudiciall to the common weale of this land, and his subjects of the same, remembreth, that among all other things, great inconveniencies daily doe increase, by desolation and pulling down,
“ and willfull waste of houses and townes, within this realme;
“ and laying to pasture, lands which customably have been used in tillage, whereby idleness, which is the ground and
“ beginning of all mischiefes, daily doeth encrease. For
“ where, in some townes, two hundred persons were occupied, and lived by their lawfull labours, now there are occupied two or three heardmen, and the residue fall into
“ idleness; the husbandrie, which is one of the greatest com-

* 43. Henry VII. cap. 19.

“ modities of this realme, is greatly decayed; churches de-
 “ stroyed; the service of God withdrawn; the bodies there
 “ buried not prayed for; the patrons and curates wronged;
 “ the defence of this land against our enemies outward,
 “ feeble and impaired, to the great displeasure of God, to
 “ the subuersion of the pollice, and good rule of this land, if
 “ remedie be not provided: Wherefore, the King, our So-
 “ veraigne Lord, by the advice of the Lords, Spiritual and
 “ Temporal, and the Commons in the said Parliament as-
 “ sembled, and by the authority of the same, hath ordain-
 “ ed, enacted, and stablished, that no person, of what e-
 “ state, degree, or condition that he be, that hath any
 “ house or houses, that at any time within three yeers pas-
 “ sed, hath bene, or that now is, or that hereafter shall
 “ be lette, for ferme, with twenty acres of land, at least, or
 “ more, lying in tillage and husbandrie, that the owner and
 “ owners of such house or houses and land, doe keepe, sus-
 “ taine, and maintaine, houses and buildings upon the said
 “ ground, and land, convenient and necessarie for maintain-
 “ ing and upholding of the said tillage and husbandrie:
 “ And if any such owner, or owners, of any such house or
 “ houses and land, take land and occupie any such house or
 “ houses; and keepe in his or their owne hands, that the
 “ said owner, or owners, by the said authoritie, be bound in
 “ like wise to keepe in tillage, and maintaine houses and build-
 “ ings upon the said ground and land, convenient and neces-
 “ sarie for the maintaining and upholding of the said tillage
 “ and husbandrie. And if any man do contrarie to the pre-
 “ mises, or any of them, that then it be lawful to the King, if
 “ any such lands or houses be holden of him immediately, or to
 “ the lords of the fees, if any such lands be holden of them
 “ immediately, to receive yearely halfe the value of the issues
 “ and profits of any such lands, whereof the house or houses
 “ be not so maintained and sustained. And the same halfe
 “ deale of the issues and profits, to have, hold, and keepe to his

“ or their owne use, without any thing therefore to be pay-
 “ ed or given, till such time as the same house or houses be
 “ sufficiently builded or repaired againe. And that no man-
 “ ner of freehold be in the King, nor in any such Lord or
 “ Lords, by the taking of any such profits, of or in any such
 “ lands, in no manner of forme : But onely the King, and the
 “ said Lord or Lords, have power to take, receive, and have
 “ the said issues and profits, as is above saide ; and therefore
 “ the King and the said Lord or Lords, to have power to
 “ distraine for the same issues and profits to be had and per-
 “ ceived by them, in forme above sayde, by authoritie of this
 “ present acte.”

Let the zealous advocates for universal sheep husbandry
 ruminate and ponder well on this statute : In the meantime, I
 shall return to the point under consideration, which resolves
 into a matter of fact ; and, to state it correctly, take the ex-
 ample formerly given of a farm of 500 acres, and suppose the
 rent to be from a guinea to 30s. per acre, and the whole pro-
 perly inclosed.

The question then comes to this, Whether there will be
 more families, and of course a larger population upon this
 farm, when in the occupation of one tenant, or when in the
 occupation of five or of ten different tenants ; sheep husban-
 dry in each of these cases being excluded : and that there shall
 be no more of these 500 acres kept in pasture, than shall be
 necessary, upon the whole, to render it more productive in
 corn ?

Suppose, in the single farm, that the system shall be so ar-
 ranged, as to keep always about a fifth in grass, which shall
 be cut one year in hay, and pastured for four years, before it
 shall return again to corn.

This leaves about 400 acres for tillage ; and if two horses
 and one ploughman shall be allowed for every 50 acres, the

numbers of each would be 16 horses and 8 ploughmen. But 14 horses and 7 ploughmen, under the direction of one tenant, will be fully sufficient.

Five of these seven ploughmen will be cottagers, and married servants, the other two unmarried.

2dly, Four persons will be necessary for threshing the corn; and three of them will also be cottagers.

3dly, There must be a herdsman to look after the cattle, who will be a cottager likewise.

The tenant will have 4 cows, and four of the cottagers will have a cow each.

The stock upon this farm will stand thus: The family of the tenant and his nine cottagers give in all ten families, 3 unmarried servants, with 14 horses and 8 cows.

The 4 persons who are supposed to be necessary for threshing the corn, will have constant employment when not engaged in the barn, in the filling and the spreading of dung, in the turning of compost, and in the hay and corn harvests, and other works upon the farm.

Suppose, 2dly, That this farm shall be divided equally among *five* tenants, the stock will stand thus: Each of these tenants and his son will work a pair of horses; and each tenant will have an unmarried servant to work another pair.

Each of them will also have three cows; and suppose all the five to give employment to three threshers, who are generally cottagers, the stock will be:—

The five tenants give five families, and the three cottagers three families, in all 8 families, and five unmarried servants, with 20 horses and 15 cows.

Lastly, let these 500 acres be divided into ten farms, of 50 acres each; in this view of the case, each tenant will have two horses, which he must work himself; and he will have two cows, which his wife and daughters must attend to; and with the assistance of the male part of the family, each tenant must contrive to thresh his own corn, for the narrowness of his

possession will not admit of his keeping a cottager, or even to pay and feed an additional unmarried servant.

The stock in this case will stand thus : The 10 tenants give ten families, with 20 horses and 20 cows.

The blacksmith and the carpenter shall be supposed equal in number in all the three cases ; and although it is obvious, that the domestic female servants unquestionably must be more numerous, in the establishment of the *single* tenant, than in either of the other two cases, they shall be left out of the calculation.

If these numbers are rightly put down, it is evident, that so far as affects population, the balance is in favour of what may be called the single or the large farm, while, at the same time, the number of horses and cows upon this farm, are less than in either of the other two cases.

The wages paid to a married servant in kind, that is, in corn, amounts to 6 bolls and a half of oat meal, in the year, with the exception of the *Hynd* ; and on that account, the allowance to each of the men-servants shall be supposed 9 bolls.

In the *first* case, according to this calculation, including the family of the tenant, the consumption of corn will amount to 117 bolls annually. But as his establishment in female servants will be larger, suppose his consumption equal to 130 bolls of corn.

The allowance for each horse cannot be less than 12 bolls ; of course, 14 horses will consume 168 bolls.

In the 2^d case, viz. of the 5 tenants ;—although the number of cottagers are two less, the number of servants upon the whole are the same, but the number of horses are considerably greater ; and, consequently, the total consumption of corn in this case must be greater than in the former. And as the number of horses are the same in the third view, as in the second, the same conclusion follows.

It is true, however, that the single tenant will consume more animal food, as he will live better than the tenants in either

of the other two supposed subdivisions ; but, to balance this, he saves the summer food of 6 horses, and about half the number of cows that must be kept in the other two cases.

Besides, as the single tenant will live in a better style, and his family will be better clothed ; he must, in the *ratio* that he consumes more of the excisable and customable commodities, encrease the revenue. And in the *ratio* of better clothing, he must encourage the native manufactures of the state.

Perhaps it may be said, that no allowance has been made in any of the two last cases, for the labour of filling and spreading the dung, &c. as supposed in the first case. But it is obvious, that where only one cart, or, as in the second case, only two carts can be employed in the leading of dung, a day-labourer cannot, in either of these cases, have sufficient employment ; of course, the driver of the cart must fill it himself, and the loss of time in the work of the horses, which this delay must occasion, does of itself sufficiently prove, that the 14 horses kept upon the large farm, will do more work than the 20 horses, in any of the two other cases.

I will not pretend to say that these calculations are perfectly correct ; but they come so near the truth, that I will venture to affirm, a farm of 500 acres in the occupation of one tenant, tends more to encourage population, while, at the same time, it sends more food to market, than any other way in which that extent of ground can be divided.

Covenants in Leases.—I have had frequent opportunities, professionally, of considering the many embarrassing, the complicated, and, some times, inexplicable covenants, which the anxiety of landlords have introduced into leases, from the law-suits that these covenants gave rise to. I shall now, therefore, shortly state what this mode of experience has suggested to my mind, upon this important branch of rural economy.

In the 1st place, most of the leases in Scotland prohibit the tenant from *assigning* and *subsetting* his farm; and, indeed, it is now an understood principle, at common law, that unless the tenant shall stipulate this power, and that there shall be a special covenant to that effect in the lease, he can neither assign nor subsett; or, in other words, if the lease shall be silent upon this point, the tenant has no such power.

The principles upon which this rule has been established, seems to me to be grounded upon good sense and sound policy.

There ought to be no interposed person betwixt the landlord and the actual cultivator of the ground; at least, none that is to derive any benefit out of the produce of the ground.

The landlord and tenant are the two persons who alone have a just right and interest in the produce of the ground; the one, in virtue of his right of property in the ground, and the other, in virtue of his stock and industry employed in it. Let these two persons divide the produce in such proportions as they shall agree upon; but if a third person shall draw any part of that produce, it is clear, he interferes with the just interests of the other two, without contributing either property, stock, or industry, or any other consideration that can entitle him to a share of this produce.

If a merchant, when he borrows money to carry on trade, employs a broker in this business, he must pay him; whereas, if he and the moneyed man had met together, the expence of the broker might have been saved.

The tenant, in like manner, borrows the use of the land for a definite term, upon which he is to employ his industry and stock, and he engages to pay a certain premium to the landlord, for the use of it. And when the time during which the loan shall subsist, and the premium that is to be paid, are settled, the contract is perfected, and the business finished.

In the *next* place, Suppose the landlord has made a judicious choice of a tenant; and supposing, also, that the rent is

not too high, and that the lease is to endure for the term of 19 years, restraining clauses, as to the mode of cropping, for the first fourteen years of such a lease, seem to me perfectly unnecessary, because the tenant, by cultivating and improving his farm, is studying his own interest, and, at the same time, most effectually promoting the interest of his landlord.

When the lease draws within 4 or 5 years of its final period, moderate restraints may be necessary. As for example, to prohibit the sale of hay, straw, or dung. *2dly*, To stipulate that a certain proportion of the farm shall be left in grass, of a progressive given age, at the expiry of the lease, suppose three, two, and one year old. And let the particular fields, and the particular age of the grass of each be specified in the lease, and let it also be covenanted, that a certain part of the grass shall not be pastured upon, after the Martinmas, and another part, not pastured after the Candlemas, preceding the removal.

3dly, Let the landlord reserve the power of plowing these fields, the one after Martinmas, and the other after Candlemas, if he shall see proper.

4thly, Let a definite quantity of fallow, to be left to the incoming tenant, be also one of the covenants, which the landlord shall have the power of plowing, after the crop of that field shall be separated from the ground.

5thly, The out-going tenant should be obliged to leave all the dung of the penultimate crop, for which he shall be paid a specified sum per cubic yard, to be determined in the beginning of June; and for the purpose of making the mensuration correct, let the out-going tenant be obliged to lead it out of the yard, and lay it up in a square dung-hill.

6thly, The landlord should stipulate the power of sowing with grass seeds, the whole, or any part of the out-going tenant's crop, provided these grass seeds are sowed and harrowed in with the seed for that crop, wheat excepted, which may be sown with grass seeds, during all March.

And, *lastly*, That the whole straw and fodder of the last crop shall be *Steel-Bow*.

The out-going tenant can fulfil every one of these covenants, without difficulty; and if they shall be fulfilled, the interest of the landlord will be sufficiently secured, because his object is only to prevent waste.

It will be observed, that several of these covenants apply to the terms of removal in this county, which have already been explained.

Duration of Leases.—About 60 years ago, it was a general practice in this county, to grant leases for 3 nineteen years, with a view, as it was expected, to encourage the tenants to go on briskly with improvements. But this consequence did not always result from these long leases. And at present, our leases in general run from 19 to 21 years.

Where the lands to be let, have been improved and cultivated, such as is generally the case in the low and middle district of this county, a lease for either of these periods seems as reasonable endurance, both for landlord and tenant. But where the lands are not so highly cultivated; and require draining, liming, and inclosing, the lease ought to be longer, and perhaps for 2 nineteen years; but there should be an increase of rent, during the 2^d nineteen years.

Rents.—The statute authorising the valuation of tithes, and various other particulars, recorded in the statute book of Scotland, do clearly establish, that anciently the rents in Scotland, like those in ancient Italy, were paid in corn, or what we call *in kind*; and this practice continued until within these 40 years. In the low district, three fourths of the rent was paid in this manner; and this proportion gradually decreased in the middle, and still more in the high district.

It was considered, at that period, to be a considerable relief to the tenant, that the landlord received his rent in corn, and

took upon himself the responsibility of the purchaser, with whom the landlord bargained; and all that was incumbent on the tenant, was to deliver, upon his own expence, the stipulated quantity of corn, in sufficient marketable order, to this purchaser. The *medium* distance the tenant was bound to deliver his corn, was from 12 to 15 miles.

At this period, the purchasers were comparatively few, and the credit of many of them doubtful; and in plentiful years, it was difficult to find a market for the rent corn, which was always sent out of the county, as the surplus produce that remained with the tenant, was in general fully sufficient for our internal consumption.

Many of the extensive proprietors had granaries upon their estates, for the storing of their corn rents, several of which still remain; and in the sea port towns of Dunbar and North Berwick, there are granaries, in which large quantities of corn can be stowed, and where the smaller proprietors either stored their corns upon their own account, or they more generally sold them at a very low price, to the corn merchants residing in those burghs, who speculated upon it.

The market for oats was in the Western Highlands, and in Ireland. But the wheats and barleys generally went to Portugal and Spain; and the practice was to load the ships outward with corn, for one or other of these kingdoms. These vessels, after disposing of the cargo, continued in the *carrying or coasting Mediterranean trade*, under the protection of the British pass, for two or more years, according to the state of the vessel; and then they returned with a loading of wine.

The surplus profit, after purchasing the wine, was brought home in Spanish and Portugal money, which at that time was the principal current gold specie in Scotland.

The period alluded to, was betwixt the years 1720 and 1740, and prior to the British Statute which allowed the Americans to sail directly from America to the Southern parts of Europe, with what is called *the enumerated articles*.

This statute gave a severe blow to almost the only trade then in Scotland *; because the Americans found, or fitted out and victualled their ships much cheaper than could be afforded in any part of Great Britain.

This inconvenience, with regard to corn at least, was soon obviated and forgot; for after peace was restored to Europe, by the treaty of Aix-la-Chapelle, a spirit for manufacture and commerce burst forth in several places of Scotland; and the husbandmen of this county, finding a ready market for their corns, at what was then supposed a good price, they seized the plough with animated energy and vigour; and finding, likewise, that the merchants might be trusted with their corns, they requested to have their rents converted into money, which being a relief also to the landed proprietors, was readily conceded; and progressively, since that period, the rent, almost in every new lease, has been changed from corn to money.

I confess, however, that I do not altogether approve of the change: and I still incline to be of opinion, that the one half only should be in money and the other in corn.

By this division, the advantage of a progressive rise in the price of corn, and the risk of a fall in that price, is divided equally betwixt the landlord and tenant; who, as they have an equal interest in this matter, the profit and loss should also be divided in the same proportion.

I have had an opportunity of seeing the rentals of some of the finest and richest lands in this county, made up prior to the Revolution; and the rent was a boll of wheat, and a boll of barley, and, in one or two instances, five firlots per acre.

These lands were let upon a lease for 19 years, about 14 or 15 years ago, for a money rent; and the sum now paid,

H h

* I have been informed, by an old gentleman of this county, the late Mr Caddell of Cockenzie, who was himself concerned in this carrying trade, that he once saw, anno 1735, 30 two-masted vessels sail down the Frith of Forth in one fleet, loaded with corn and various merchandize suited to the Southern markets of Europe; and all these vessels were intended for the carrying trade.

runs from 40 to 44 shillings per acre, and it was thought exceedingly high.

If, however, the corn rent had remained, the difference betwixt the fair prices of it, and the present money rent, would have been trifling; and now, lands of the same quality are letting from 40 shillings to two guineas and a half, per acre.

On the other hand, I know some farms in this county, which, 30 years ago, were let at 5 shillings per acre, and about that rent.

The leases of these farms were then about expiring, and they have been twice let since, and at present they pay about 20 shillings per acre.

Several other instances could be given, of the apparently astonishing encrease of rent upon farms that were formerly rented for money; and, in general, I have observed, that, recently after every farm was let, it was universally said, at the time, to be over rented. But, after three or four years, it was discovered, that the rent was a fair one.

Both these observations seem to me to have been well founded.

If the prices of corn had continued stationary, the bargain probably would have been a hard one.

If these prices had fallen, it would have proved, perhaps, a ruinous one to the unfortunate tenant, if his landlord had rigorously insisted upon his continuing in the farm, until the expiry of the lease.

The prices, however, both of corn, and every species of stock, having continued to rise, the farm in a few years appeared to be reasonably let.

Most of the money rented farms in this county, that now are possessed under leases of 10 years old, and upwards, were then let about the following estimated values of the several species of corn: viz. wheat, at 18 s. per boll; barley, at 14 s. per ditto; pease and beans at 12 s. per ditto; and oats at

11s. 6d. per ditto : And in so far as the current prices have exceeded these estimated values, the balance has turned out in favour of the tenant.

In the leases of a more modern date, these values have been considerably increased ; and the lands that formerly let at a boll of wheat and a boll of barley, per acre, and the fashionable turnip soil, of the species first above described, now give, of rent, from 45s. to two guineas and a half per acre. But if the prices of corn should fall to these estimated values, and continue stationary nearly about these prices for a period of years, I am apprehensive, the balance will turn severely the other way, upon the money rented farms ; as the loss, in that case, will fall entirely upon the tenant, in place of being divided betwixt the landlord and him ; which would be the case, if half the rent had been payable in kind.

Money may answer very well, as the medium of commerce, or of any other transaction that is to be instantly perfected ; because the subject delivered is appreciated in money, according to the value that money bears at the time of concluding the covenant : But it may be questioned, how far money is the proper *medium* for fixing a just average of the value of the produce of land for the currency of a lease of 20 years endurance.

When money is considered merely as an article of commerce, it is of all others perhaps the most liable, especially in a commercial country, to violent and sudden changes, in the increase or depression of its value, from causes that are seldom or never foreseen, until they have been severely felt ; witness, the years 1772 and 1793.

When money, or any other commodity, becomes plenty, it falls in its value ; that is, it requires perhaps 25s. now to purchase as much corn, as could have been purchased for 20s. some years ago.—But this 25s. will not purchase more of the other conveniences of life, than the 20s. would have commanded formerly ; and the price of labour must rise with the de-

pressed value of money, and the nominal encreased value of provisions.

How far the unrestrained power of banking, which seems to me a new mode of creating artificial money, and rendering it thereby, perhaps, too plenty, tends to promote the true and permanent interest of the nation at large, is a question that falls not within the limits of a report upon rural œconomy to investigate. But my humble opinion upon the whole matter, is, that in corn counties, a certain proportion of the rent ought to be paid in the produce of the ground.

As to the mode of ascertaining the value of lands, or what proportion of the produce the landlord, in virtue of his right of property, ought to require for the use of his lands, which he concedes or lets to his tenant; and what proportion should remain with the tenant, as the reward of his industry, and a proper return for the labour of his stock employed in cultivating that land, must depend upon the quality of the soil, the climate, and the vicinity to market.

For example, the rent of land that produces only five bolls an acre, and land that produces ten bolls per acre, cannot be calculated in the *ratio* of 5 and ten. The former will probably require more labour, and more seed, to give 5, than the latter will, to give 10 bolls.

If one climate shall be more favourable for corn than another, the expence of rearing and reaping a crop in that favourable climate, must be less than in a more unfavourable climate.

Lastly, Where the market is remote, the expence of delivering the crops must be greater, than when the market is in the neighbourhood of the farm.

Although it is very natural for a tenant, in bargaining for a farm, to endeavour to keep the rent as low as possible, I am humbly of opinion, that a landlord mistakes his true interest, if he takes the opposite extreme; and endeavours to screw up the rent as high as possible; or, in other words, if, without discrimination, he shall accept of the highest offer.

A few per cents thrown into the scale of the tenant, will, in general, give the landlord the satisfaction of seeing a thriving tenant, and insure a well paid rent.

Where a tenant has difficulties to struggle with, his payments must be tardy and uncertain; and without supposing the tenant ultimately to fail, which frequently happens, when the rent has been over-stretched, the loss of interest, arising from the mere delay of payment, independent altogether of the uncertainty as to the time the payment shall be made, and the chagrin that a disappointment of that kind sometimes produces, will more than counterbalance all the allowance or abatement, that would have been necessary to procure a substantial tenant and a well paid rent.

HINTS FOR FURTHER IMPROVEMENT.

CATO, in his treatise *De Re Rustica*, puts the following questions : *Quid est agrum bene colere ? Bene arare. Quid secundum ? Arare. Tertio stercorare.*

Hollow Draining.—If Cato had practised husbandry in the latitude of 56 degrees north, his first direction would have been, to *hollow drain* every spot of damp and spongy ground appearing in the fields of corn.

A wet, or even a damp soil, chills the roots of every species of corn; and the first object of the industrious husbandman, certainly is to carry off the superfluous moisture that produces this pernicious effect.

Dampness in the soil proceeds from one of two causes, viz. springs, or 2^d surface water, stagnating upon the ground.

The first are easily drained by a cross cut, a little above where the spring breaks out.

The burst is occasioned by a change in the metals below, which stops the circulation of the water under ground, and forces it to the surface.

In order effectually to drain a spring of this kind, the cut, a little above the burst, ought to be made so deep, as to touch this change in the metals; and, in general, it will be found within 4 feet, and frequently at a less depth.

When the husbandman touches the clay, he may with certainty conclude, he has intercepted every drop of water that disturbed his ground; and a narrow trench of 3 feet deep and 1 foot wide, with a declining level to the nearest ditch, filled with round land stones, to within a foot or 8 inches of the surface, will carry off the whole of this water under ground.

Although the cut immediately above the spring, is deeper than the conductor, the water will never rise higher in the deep cut, than the mouth of the narrow trench that is to convey it away.

Stagnated surface water must be carried off nearly in the same manner; the only difference is, that the cut should be made rather wider, and filled with stones, to within two or three inches of the surface, so that the plough, in drawing the water furrow betwixt the ridges, shall always touch them; it is evident, also, that these drains should be drawn across the ridges †.

† Where stones are not to be found, faggots, particularly of the black thorn, which nature has kindly distributed, perhaps, for that purpose, in most uncultivated fields, have been found to answer well, (according to my information,) in the county of Shropshire, and other counties of England. Mr Campbell of Shawfield has introduced this mode of hollow draining into Clydedale very successfully.

Where neither of these means for hollow draining lie within the command of the husbandman, he cannot be too careful in drawing with the plough, and afterwards scouring with the spade, open drains, to carry off the superfluous moisture.

The husbandman, who shall have completely drained his ground, will be entitled to say, in the emphatic language of Virgil.

“ *Atque imperat arva.*”

Deep Ploughing.—*Bene arare*, is certainly the next rule.

The ancient rustic writers recommend deep ploughing, once every five or six years, because they say, the rain gradually carry down the richest and the most nourishing earth; and one of them mentions a practice that prevailed among *Megarenses*, of digging and of turning up the ground, every fifth or sixth year, as deep as the rain water generally penetrates; *ima terreni ad summa regerunt, quo seges renovelletur.*

Let no husbandman be afraid of ploughing deep, even in thin soils upon a clay bottom, when he has it in view to fallow and manure that soil.

Tills do not possess any quality that is *actively* poisonous; the power of tills is merely *negative*; and the *tenacity* or the close adhesion of its parts, is the principal cause of its sterility. But when it is exposed to the influence of the atmosphere, and incorporated with manure, (lime, dung, or compost,) it easily separates and acquires even a loamy colour. This is not stated as a mere opinion, but a positive fact, founded upon 20 years experience.

Frequent Fallows, and Sowing upon the Winter Furrow.—When Cato directed the husbandman to plow well, he certainly meant he should make his land clean, by introducing fallows as often as the state of the ground seemed to require; and I must here observe, to the credit of many of the husbandmen of this county, that the several rotations already mentioned, upon the strong lands, are each of them occasionally in-

This work should be particularly attended to, at two seasons of the year, viz. in the autumn, and before the wet weather sets in; and in the spring, immediately after the sowing and the harrowing has been concluded.

terruted by the introduction of fallow, when it appears necessary.

These fallows are in general hand gathered, and the roots of the couch grass, and other rooted weeds, are carefully picked up, and carried off.

This is a branch of husbandry that cannot be too attentively executed ; and when a husbandman can say with truth that he has made his lands thoroughly clean, he may reckon, with confidence, upon a productive crop.

Fallows, since the introduction of turnip husbandry into this county, are confined mostly to the different species of strong soils, above described. And these lands (supposing them clean) if plowed before winter, may not only be sowed with safety upon that furrow, but with a greater certainty of a crop, than if a second furrow shall be given in the spring ; because the seed is committed to the soil that has been mellowed by the winter frosts ; whereas, if spring plowed, this mould will be buried, and a rough cloddy surface will be brought up.

Although clay lands are generally understood to stand drought much better than the lighter soils, yet, when these strong lands are spring plowed, they lose a great deal of that power, because the roughness of the surface allows the evaporation of the moisture from them, nearly as quickly as from the light soils.

These lands, too, are generally spring plowed twice, and frequently three times in this county, for barley ; and if drought follows, as commonly is the case in the month of June, the barley, upon the top or crown of the ridge, in particular, seldom comes through the ground till the month of July.

Let the husbandmen, however, in those counties where fallow has not been introduced, be cautious how they adopt this advice of sowing upon the winter furrow ; because their ground must be full of native indigenous plants or weeds, which, if the ground shall be ploughed early in the season,

will grow in open weather; and if the ground shall be sowed upon that furrow, these weeds will grow faster than the corn.

Sowing under Furrow.—I speak from successful experience, when I advise sowing wheat after fallow, upon strong soils *under furrow*.

The advantages resulting from this practice are manifold: *1st*, It puts the seed out of the reach of vermin: *2^{dly}*, It gives such a hold of the ground as to prevent its being thrown out by damp frosts in the spring: *3^{dly}*, It promotes *tillering*, in so much, that three firlots or bushels of seed will produce as heavy a crop as four bushels sowed in the ordinary way: *4^{thly}*, It admits of being sowed at least two or three weeks earlier, without the risk of being too far advanced; and of being exposed to the accidents and misfortunes which early sowed wheats, in our climate, are subject to, as already explained.

The advantages of sowing barley under furrow, upon light land, are, in the *1st* place, that it saves seed in the same proportion as in wheat: *2^{dly}*, It puts the plant nearer the moisture, and more out of the reach of the drought. *3^{dly}*, If a spring of annual weeds shall arise, they may be boldly destroyed by harrowing, without the risk of hurting the barley.

It is necessary, however, to inform, that sowing under furrow throws the crop about three weeks later in reaping, than if sowed in the ordinary method.

Early Sowing.—The husbandman in high latitudes can hardly err in sowing his crops as early in the spring as the ground shall be in order for receiving the seed, particularly on strong lands; this is another advantage that results from sowing on the winter furrow.

There is much more to be apprehended from a late and a damp autumn, than from a cold frosty spring. The vegetable kingdom so far resembles the animal, that plants in a state

of infancy will endure a great deal of more cold, without material inconvenience ; or, what is the same thing, they will sooner recover any injury resulting from cold, than when they are advanced in age. One cold frosty night, in the autumn, when the plant is in a state of ripening, is an irreparable injury ; whereas twenty such nights in the spring, will not be discoverable in the crop.

It is of infinite advantage to bring the crop in high latitudes to ripen as early in the autumn as possible.

Those corns that are ripened in all August, will be of more value, by several *per cents*, than those ripened after the Equinox.

The evenings and the mornings begin to turn cool about that time, which unquestionably must materially affect the feeble and languid vegetation of a ripening plant.

The great *desideratum* in farming, is a succedaneum, hitherto undiscovered in this county, at least, betwixt the turnip and the grafs.

One or two experiments have been attempted with tolerable success, in sowing late turnip, in the autumn, upon land that is to be made into turnip in the ensuing summer*.

This spring (1794,) the turnips, which in general began to run very early, have in some places had the top cut off close to the root ; the effect of which was completely to check the vegetation for about ten or twelve days ; and the young shoots which have since appeared, grow so slow, that the growth seems to have been thrown behind fully three weeks. But as

* I have about two acres of turnip sowed in September last, after a crop of *ley* oats, which have kept 2 score of sheep, mostly ewes and lambs, for these three weeks past (24th April 1794,) and will keep them for two weeks longer : These turnips have formed no root ; but the top continues growing, and gives plenty of green food.

(*November.*) I have now to inform, that the turnips sowed in June last, upon this part of the field, were a week later than the turnips sowed upon the other part of it ; and this notwithstanding, they grew more rapidly ; and, until the plants became stationary, they seemed, from appearance, to have been sowed two weeks before the rest of the field.

this experiment is not yet perfected, it can only be said at present to promise well.

Ruta Baga.—The seed of this plant was first imported into this county from Gottenburgh, about 7 years ago. It is of the turnip tribe, and we call it the *Swedish turnip*, although I entertain a doubt of its being a native of Sweden; because, in the account of the culture of it in that country, which I have seen, the Swedish name is *Ratbe Kohl*, which means *turnip kail*: I am inclined therefore to think, that *ruta бага* is a foreign name even in Sweden.

The seed must be sowed in a seed bed in April, and is transplanted into the field in the end of May.

The root is yellow, although of a lighter shade than the yellow turnip; the skin is remarkably thick and hard, and the whole texture of the root is closer, and firmer than the turnip, by at least one third; and, in point of size or weight, it runs 4 to 10 pound.

The foliage is not near so luxuriant as that of the turnip, which, in my apprehension, forms a serious objection to the general culture of the plant; for the luxuriant foilage of the turnip smothers every weed; whereas, the weeds will grow without restraint betwixt the rows of the *ruta бага*.

The foliage of this plant very much resembles that of the *colewort*, in colour, in shape, and in flavour.

Notwithstanding of the hardness of the texture, cattle having good teeth, eat it greedily; and it has this singular advantage over the turnip, that when it is in full blossom, the root is rather softer, and has none of that reedy clofs netting which the turnip acquires in that state.

The culture of this plant has not been carried to any extent in this county, partly on account of the crows, who are apt to pull it out of the ground, soon after planting.

The sickly appearance the plant wears for two or three days, immediately after being planted, seems to indicate a *grub*,

or some kind of vermin, at the root, which the crows feed upon, and they pull up the plant, in order to come at this vermin.

It has, however, been tried, upon a small scale, by Sir David Kinloch, of Gilmerton, and by Mr Charles Dalrymple, upon the lands near the town of North Berwick, who housed it until the month of May, and the cattle then eat it greedily*.

Perhaps this plant might answer, in part at least, as a *succedaneum* betwixt the turnip and the young grafs; cole or rape never have been tried in this county.

Plowing with Oxen.—The Romans always used oxen in their ploughs; and, anciently, this practice was universal in Scotland; and I am inclined to think, this practice, in former times, was equally universal in England; but I have observed, that every county in Scotland have taken to the plowing with horses, progressively as it has adopted the new and improved system of agriculture.

This progressive change from the use of oxen to that of horses, seems to me to have proceeded from the following causes: viz: *1mo*, On account of the driving of lime, which is the basis of every agricultural improvement.

Oxen are certainly not so proper for long or distant carriages as horses, especially if the road has been made artificially hard, by the ordinary method of making and repairing the roads, which the use of wheel carriages renders at all times necessary.

Oxen are also very improper for carriages, where the roads are wet and deep.

* These gentlemen, and others who have tried them, have informed me, that they sow the *ruta бага* with the drill barrow in the field they are to grow in, and that they thrive better, than when transplanted; but they must be sowed a week at least earlier than the turnip; at the same time, the directions for sowing and transplanting them, as stated above, were copied from the directions sent from Sweden with the first seed from that country: A difference in latitude may be the cause of this.

2dly, When oxen are used in the plough, upon light gravelly land, they are apt to be galled in the cleft of their feet.

This inconvenience came to be sensibly felt, when the improvements in agriculture led to the repeated plowing of the ground; and when, of course, oxen were kept more closely, and more constantly in the plough, than the more ancient system of agriculture required.

3dly, Oxen, in plowing strong land, dip more with their feet than horses do; and such land can be ploughed with safety, when in a raw state, much sooner by horses than by oxen.

These seem to me the principal causes that have led to the use of horses in place of oxen; but I am inclined to be of opinion, that we have carried this principle further than in wisdom we ought to have done; and that there should be a mixture of cattle and of horses for the plough, especially upon every farm that admits of any branch of the turnip husbandry.

The objections to the use of oxen, above stated, prove this proposition, that oxen *alone* ought not to be kept as the plowing stock; but as the improved mode of agriculture requires a great deal of plowing during the summer, in fallows and in drill crops, when the ground is perfectly dry, and when of course the dipping of the oxen can do no injury, they may then be used with safety: 2dly, To remedy or prevent the galling in the feet, let six oxen be kept to do the work of four.

Oxen, full aged, or about seven years old, that have been plowed from three or four years of age, when worked thus gently, and kept, at the same time, in good pasture, will be in as good order for laying upon turnip that season, as the average run of cattle that are put to the stake in Scotland generally are. And these oxen will pay for the turnip, fully as well, after giving work, as they would have done without it.

If the husbandman can perform a fourth or fifth of his plowing by oxen, in place of horses, it is obvious, that the saving betwixt the price of an ox and a horse must be considerable.

Besides, the flock vested in oxen is in circulation ; and if they shall be tolerably well bought, they will pay near *cent per cent* for their keeping, within the 12 months ||.

At the same time, I am clearly of opinion, that the husbandmen possessing the richest lands in the low and in the middle district, certainly ought not to rear cattle. A bullock, at three years old, if sold under 10 l. will not pay for his keeping ; and a young colt, of the same age, sold under 20 l. will not repay the expence of rearing him.

The general extent of the farms, in these two districts, as already mentioned, seems to me too limited to admit of the rearing of stock.

The Rook, or Corn-Crow.—The crow appears never to have been considered in Scotland as a branch of food ; on the contrary, we have an old statute, † which gives the following directions for the destruction of them : “ *Item*,--For thy that men
“ confidderis that *Ruikes* biggand in kirk zairdes, orchardes, or
“ trees, dois greate skaith upon cornes : It is ordained, that they
“ that sik trees perteinis to, lette them to big, and suffer on
“ na wife that their birdes flie away : And quhair it be
“ tainted that they big, and the birdes be flowin, and the nest
“ be funden in the trees at Beltane (1st of May) the trees sal
“ be foirfaulted to the king, and hewin downe, and five
“ schillings to the kingis unlaw.”

It would seem, from this statute, that the church yards, in former days, were better clothed with trees, than in general

|| To prevent heavy land being injured by the feet of the oxen, if it shall be plowed a little damp, let the two or three last furrows upon each side of the ridge be plowed by horses, and put one horse before the other ; every practical husbandman knows at once, that horses yoked in this manner, go in the furrow, and never set a foot upon the land that has been plowed. I generally follow this practice, when plowing heavy lands with horses, which go a-breast ; that is, I take up the furrows with two horses, yoked the one before the other.

they are at present. But if this statute was now to be carried into effect, it would forfeit to the king a considerable proportion of the finest trees in this county; particularly in the Earl of Haddington's woods, round his seat of Tynningham; and many of the husbandmen in the eastern part of the lower district, would not regret the loss.

Since these woods have grown into forest trees, the crows have increased there to an astonishing degree, and they have really become a destructive nuisance.

In the spring, when the corn is just pointing through the ground, they follow it down with their bill, and they bring up the seed, and leave the shoot, like a white maggot, upon the ground.

According to my observation, the crow sends his bill into the ground, in quest of the germ, or seed, up to his nostril; if the seed could be buried to a depth of two inches, it would be placed out of the reach of injury from crows.

In the summer, they treat the young potatoes in the same manner, and every potatoe that shows the smallest bit upon the surface, or within an inch and a half of it, is almost sure of being destroyed.

In the autumn, they attack the first ripe corn.

The crows are remarkably fond of wheat, and they treat the new sowed wheats, as they do the spring corns; and lately they have begun to attack the turnip during the winter; this threatens to be a serious evil; as a turnip, when once the skin is broke, spoils and corrupts immediately.

From the prodigious number of crows that are to be seen in Tynningham woods, from the end of Autumn until the end of February, I am satisfied the crows retire from the inland country during that period, and winter in these woods, where the vicinity of the sea renders the winter more mild, and the ground less covered with snow; and they generally separate, and take to their building quarters, sometime betwixt the 25th February, and the 1st March.

In the year 1779, a considerable number of the tenants in the neighbourhood of these woods, associated together for the purpose of killing the crows, and they assailed themselves at the rate of 5s. Sterling per plough, and latterly at the rate of 2s. per ditto.

Out of this fund, they paid a bounty of a penny a head for old crows ; and in the beginning of the season, they paid 2d. per dozen for the young ones ; and as the season advanced, they encreased the bounty to 3d. 4d. and 6d. per dozen.

The numbers killed, and the sums paid, in the *ratio* above mentioned, stand thus :

Years.	Old Crows.	Young Crows.	Total.	Expence of Killing.
1779	3499	6112	9611	L. 22 6 7 2
1780	No old	8266	8266	7 4 4 2
1781
1782
1783	2688	4742	7430	19 0 3
1784	1758	8914	10672	17 7 1
1785	1431	6931	8362	14 3 0
1786	172	2249	2421	6 0 0
1787	} 4089	8559	12648	27 16 2 2
1788				
1789	808	2953	3761	6 11 10 1
1790	987	2033	3020	6 9 2 2
1791	698	3105	3803	5 16 3 2
1792	399	3263	3662	4 8 7
1793	57	2142	2999	5 11 2
13	17,386	59,269	76,655	142 14 7 3

Three of the subscribers met weekly during the breeding season, and received the heads of the crows killed, which, after being numbered, were split with a hatchet, and the bounty was paid.

Mr Robert Dudgeon, tenant in Tynningham, who paid the bounty and kept the accounts, furnished me with the above particulars ; and he made the following observation ; viz. That the expence of killing of 76,655 crows, amounted only to 142l. 14s. 7 $\frac{3}{4}$ d., which is a trifle short of 38 shillings per thousand. Whereas, if the damage done by a crow in one year,

shall be estimated at 1d. only, 1000 crows commit a waste, in that *ratio*, at nearly 4 guineas a year.

Pidgeons.—It is a matter of perfect uncertainty, when this Asiatic bird was first introduced into Scotland: It seems, however, highly probable they came here with the Romans.

By a statute, in the reign of James the first §, the breakers of orchards, the stealers of fruit, the destroyers of cunningaries (rabbit warrens) and *dowcattes*, (dove cotts or pidgeon houses,) are subjected in a fine of 40s. to the King, and an assythment to the party *skaited*.

By a statute in a subsequent reign, ‡ lords and lairds are directed to make deer-parks, cunningaries, and dowcattes. It would seem, however, that this enactment had been carried to too great an extent, and that the pidgeons, from their numbers, destroyed more food than they produced. And in the reign of James the Sixth, † it is enacted, that no person shall build a pidgeon house, unless he shall be possessed of lands yielding 10 chalders of victual, lying around the pidgeon house, or within two miles of it.

The pidgeons are certainly a destructive animal in the approach of harvest, when it is supposed, with what truth I shall not take upon me to determine, that he consumes his own weight of corn every day. I have observed also, that, like the crow, they go down with their bill fully half an inch, in quest of the germ or seed, after it has struck, particularly in every species of the pea.

There are a considerable number of pidgeon houses in the low and middle districts of this county; and, 46 years ago, they were very productive. But progressively since that period, they have been constantly upon the decline, insomuch that they do not now yield within a fourth, in point of numbers, that they did in former times.

M m

§ 1424.

‡ 1503.

† 1614.

As the number of pidgeon houses in this county have not been reduced in that period, various reasons have been assigned for this universal short produce. My own opinion is, that it arises from the improved state in husbandry; 1st by drilled crops, which destroys the weeds, upon the seeds of which they generally feed in winter: And it would seem that nature intended the pidgeon should be the companion and assistant of the slovenly husbandman, by picking up the seeds of those weeds, which his carelessness had allowed to shake upon his ground. 2^{dly}, The ploughing the lands in the autumn, and beginning of winter, after the crops have been reaped, by which any corn or seeds, that may have been left upon the ground, are buried, and put out of the reach of the pidgeons.

A few proprietors of pidgeon houses feed them during the winter; but in general they are little attended to; and the pidgeon is by no means a favourite bird with the husbandmen of this county.

Bees.—The bees are not near so productive in honey now, as they were 40 years ago in this county; and the improved state of husbandry, it would appear, has affected this industrious little animal, as much as the pidgeons: Man seems by nature an exterminating animal; and those animals he principally depends upon for assistance, require his fostering care, to make them live with him!

AGRICULTURAL MACHINERY.

I trust it will not be deemed improper to conclude this branch of the Report, with an account of the agricultural machinery of this county.

Barley Mill and Fanners.—We certainly owe the *Fanners*, and the *mill* for making *pott barley*, to Andrew Fletcher of Salton, who makes a conspicuous figure in the history of the bustling period that occurred in Great Britain, about the close of the last, and the beginning of the present century.

After the Union was finally concluded and settled, this gentleman returned to his paternal estate of Salton in this county, when his active mind was employed in pursuits less dazzling, but perhaps fully as useful, as those that had engaged his attention in the earlier part of his life.

Mr Fletcher had lived a considerable time in Holland, where he had an opportunity of seeing the *fanners*, used in *fanning* or *winnowing* the corn; and also the mill by which barley was shealed, or the husk taken from it, and made into *pott barley*. And he resolved to import both these into this county.

With this view, in the year 1710, he carried James Meikle, mill-wright in his neighbourhood, and a man possessed of a strong, though uncultivated genius, for mechanics, to Holland †.

Mr Meikle went to Amsterdam, and Mr Fletcher resided at the Hague; and the correspondence betwixt them, which I have seen, proves, that Mr Meikle had such parts of the iron-work of the machinery of the barley mill constructed in Holland, as he thought he could not easily describe, and get made in Scotland.

Mr Meikle brought these with him to Salton, where he erected a barley mill, and he also constructed fanners there.

This barley mill had constant employment, and *Salton barley* was wrote upon the sign of every *slop seller*, in almost every town in Scotland; and this notwithstanding, for upwards of 40 years it was the only barley mill in Great Britain or in

† The original contract of agreement betwixt Mr Fletcher and James Meikle, has been communicated to me by Andrew Meikle, mill wright near Linton bridge in this county, the son of James, and who is well known for his genius and skill in mechanics, by the various useful machines he has invented and given to the world in that line.

Ireland, or the British dominions in America; so slow were the people during that dull and primitive period, in copying or imitating the improvements of their neighbours.

About the year 1753 or 1754, two more barley mills were erected in this county, and progressively, the barley mill became a branch of the machinery, at almost every corn mill in the county; and for a period of about seven years, viz. from the 1756 to the 1763, the export of pott barley from this county became a very considerable branch of trade, to the extent of about 20,000 bolls yearly.

This trade, however, gradually declined, owing to barley mills having been erected in England, in Ireland, and in America.

The fanners, which every husbandman now uses, and which almost every country carpenter can construct, were almost equally slow in their progress through this county*.

Flax or Lint Mills.—In the year 1727, the Board for the encouragement of manufactures and fisheries of Scotland was erected; and as the culture of flax was altogether unknown at that period, this Board had a certain number of surveyors instructed in the culture of flax, each of whom they assigned a district of country; and, by bounties, they invited the husbandmen of each district to cultivate this plant, under the direction of those surveyors, who superintended the business, from the sowing of the seed, until the flax was watered and prepared for cleaning.

Mr Spalding, one of these surveyors, who had the charge of this county, invented the water machine, now used for the skutching and cleaning of the flax; and, under his direction, the Board erected the first machine of the kind ever known in Great Britain, at Gifford-hall, upon the Tweeddale estate in this county.

* The fanners were originally brought to Holland from China.

The mill invented by Mr Spalding wrought with vertical skutchers, and the sole alteration made upon this machine, since his time, has been to make the skutchers work horizontally. By this change in the position and motion of the skutchers, the machine occupies less space, and, of course, lessens the expence of the building necessary for containing it.

Threshing Machines.—Every person acquainted with husbandry, must know, from experience, the tedious and difficult manner in which corn is separated from the straw, in the usual mode of threshing by the hand; and, in a corn country, it is natural suppose, every husbandman would wish for some improved mode for performing this branch of his art.

Accordingly, Mr Mitchael Menzies, the younger brother of Mr Menzies, the sherriff depute of this county, invented a machine which was to go by water, upon the rude and primitive principle, that a water wheel was to drive a certain number of the flails used in threshing by the hand.

About 50 or 60 years ago, three of these machines were erected in this county; and they did a great deal of work; but their velocity and force beat them to pieces, and they were abandoned.

About 30 years ago, Mr Moir of Leckie, in Stirling-shire, invented a threshing machine, upon the principle of the horizontal flax-mill, to the skutchers of which the corn was presented by the hand.

This machine answered very well for the threshing of oats, but it headed every other species of corn.

Afterwards, two gentlemen in Northumberland; viz. Mr Alderton of Alnwick, and Mr Gregson of Wark, contrived a threshing machine, upon principles totally different from those of Mr Menzies and Mr Moir.

This machine was composed of a fluted cylinder, resembling a drum, of about six feet diameter.

Around this fluted cylinder, a number of small fluted rollers were placed, which were pressed inwards upon this cylinder, by means of certain springs. The motion of the cylinder was horizontal and slow, and the corn, in passing betwixt it and the rollers, was pressed or rubbed out. But a great proportion of it was bruised in this process, and this machine, upon that account, was laid aside.

Francis Kinloch, Esq; younger of Gilmerton, having seen this machine at work, conceived the idea that it might be improved, and the inconvenience arising from the bruising of the corn remedied, by an alteration in the construction of the cylinder, viz. by making it moveable, and to be pressed outwards upon the fluted cover, by means of springs, whereby he supposed it would press with less force upon the corn in the process of rubbing it out.

Mr Kinloch had a model of the Northumberland machine, with these alterations, constructed under his directions.

This model he showed to Mr Andrew Meikle, whom I have already mentioned: and the smooth feeding rollers were added to it. But, after repeated experiments, it was found not to answer in practice, and the idea was abandoned, although the model still exists in the possession of Mr Meikle; and Mr Kinloch and he had frequent conversations upon the subject of rendering it more perfect; and, at last, the idea of a threshing machine was conceived upon principles totally different from any that had been hitherto constructed †.

The idea was, that the corn might be separated from the straw, by means of flutched rollers acting on the corn, upon the principle of velocity, and not by pressure or rubbing; and Mr Meikle constructed a threshing machine, upon that principle,

† As Mr Kinloch and Mr Meikle are not at one, as to this invention, each claiming the merit of it, it is no part of my business, in writing a Report upon the rural œconomy of East Lothian, to enter into this dispute, far less to decide upon it. The merit, however, of the invention, it seems admitted, belongs to one of them.

with the fluted feeding rollers ; and afterwards added a machine for shaking the straw, and the fanners for winnowing the corn §.

Mr Meikle has now brought this threshing machine to that degree of simplicity and perfection, and moderate expence, that I am convinced it will soon be universally adopted upon every corn farm consisting of 100 acres and upwards ; and it will become a fixture which the landlord will originally erect, and it will then pass, like other fixtures, from tenant to tenant, under the covenant of being left by the out-going one, as our leases generally express it, “ in a sufficient tenantable condition.”

Mr Meikle constructs these machines to go either by wind, by water, or by horses.

The expence of the wind machine of the greatest power, that is, to thresh from 12 to 15 bolls in the hour, runs from 100l. to 120l., according to the situation.

A wind machine, upon a smaller scale, will cost from 80l. to 90l. Sterling.

The water and the horse machines, run from 60l. to 80l. Sterling.

The horse machine requires four horses ; and this, and the water machine, will each of them thresh about six bolls an hour.

The wind machine is so constructed, that the person who feeds in the corn, can, without difficulty, increase or diminish the velocity at pleasure, or he can completely furl the sails in about half a minute of time, merely by pulling a rope that hangs at his hand.

A neighbour of mine, who is possessed of an extensive corn farm † ; and who has used a horse threshing machine, (con-

§ I have given the preceding historical account of threshing machines, and the progressive improvements and alterations that have been made in the principle of their construction and operation, from the information of Mr Meikle ; I trust, therefore, it will be found correct ; and to him I beg leave to refer those who may be desirous of further information upon this subject.

† Mr Rennie in Phantasy.

instructed by Mr Meikle) for these six years, informs me, that the average expence of threshing by the hand, of shaking the straw, and of winnowing the corn; and, in short, preparing it for the market, in the former method by the flail, is about 10d. per boll. And, by the horse machine, the expence is about 7d. per boll, independent altogether of the additional quantity of corn which the machine gives, by performing the work more correctly and effectually.

The wind or the water machines, produce an infinitely greater saving to the husbandman.

Each of these machines require five hands to work them; and suppose either of them shall only thresh, shake the straw, and winnow 40 bolls of corn per day, it will require five hands to fan or winnow that quantity of corn in one day, by the fanners, or usual method, independent altogether of the antecedent expence of threshing it.

It has been found from experience to be of importance, that the corn to be threshed by this machine, shall be kept as equal and regular in the sheaf as possible; and in order to attain this object, several of the tenants who now use these machines, in place of bringing the stack or corn into the barn at one time, bring it in only as it is threshed, that is, directly from the stack to the machine, which they do upon a two handed barrow covered with canvass, or with a one horse cart cloathed in the same manner, if the barn yard is at a distance from the threshing machine.

If the whole stack shall not be threshed at one time, they cover that part of it which is left in the yard with an oil cloth, to protect it from rain or wind.



Here ends the 3^d Branch of this Report; a circumstance that cannot give the reader more satisfaction than it gives the writer: And I promise the last Branch shall be short.

BRANCH THIRD.

*RESPECTING THE STATE OF THE ROADS
IN THE
COUNTY OF EAST LoTHIAN.*

IN the year 1750, the gentlemen of this county applied to, and obtained from Parliament, a turnpike act ||, for repairing the great post road from Dunglas bridge to Ravenshaugh bridge.

At this period, all the corn delivered during the winter, and the early part of the spring, which was the greater part of the crop, was carried to market, (except in hard frost,) upon the back of horses; and a horse seldom carried more than about 6 firloths of wheat and of pease; a boll of barley, and about 5 firloths of oats †: At present there are few, if any situations in the county, from which a pair of horses will not, at almost every season of the year, (snow excepted,) carry to market 8 bolls of wheat, perhaps more, or a proportionable quantity of other

O o

|| This act was unquestionably the first of the kind obtained for Scotland, and, as report says, the first on this side New-wark upon the Trent.

† A few powerful horses, may have carried more; but these quantities give the full average.

corns to market. At that time, it was a full winter day's work, to go from Haddington to Edinburgh, in a coach and 4 horses; and the effort was, to reach Muffelburgh to dinner, and go into town in the evening.

This journey is now easily performed, with a pair of horses, in about 2 hours and a half.

The town of Haddington lies about 4 miles from coal, which, at that time, was fetched upon the back of horses, at the rate of 200 weight, which, from thence, continues to be called a *load*; and it was a good winter day's work to fetch one load.

At present, one horse will bring from 4 to 6 loads. And in the shortest day in winter he goes and returns twice.

When this turnpike act was obtained, the town of Haddington, in particular, complained loudly of the oppression that was to be imposed upon them, by making them pay toll for every bit of coal they burned; and many even sensible and judicious tenants, entertained the same opinion: Such is the natural aversion of mankind, in general, to any change in their ancient habits!

Money was borrowed, under the authority of this statute, for repairing the road therein described; and, about the year 1770, when the act was about to expire, it was again renewed.

As the advantage of one good road through the county, was universally felt, during the period of the first act; and as the cross roads, though no worse than ever they had been, yet, when compared with the turnpike road, came to be considered as intolerable, some attention was paid to the repairing of them, under the authority of the statute of Charles the Second which obliged the tenants, the cottars, and their servants, to work six days in the year upon the high roads, "and to have in readiness, horses, carts, sledges, spades, shovels, picks, mattocks; and such other implements as shall be requisite for repairing the said high roads."

These regulations were distressful to the tenants, without proving beneficial to the public. It was therefore proposed, in the new turn-pike bill, to make the following alteration upon this ancient statute :

In the *first* place, authorising the justices of the peace to convert into money, according to the rate of labour at the time, the six days work which the tenants were obliged to perform.

2dly, The money for the labour, except in very particular circumstances, was confined to the parish.

3dly, Cottagers, possessing houses rented at 20s. and under, were exempted.

4thly, The lands in the occupation of the proprietors themselves were to be taxed in common with the other lands occupied by tenants ; and grounds let in pasture, which the lessee had not the liberty of plowing, were also to be taxed for the roads, and considered as in the natural possession of the heritor ; that is, he was to pay the tax ¶.

The statute further directed, that a list of the plowgates should be taken up, for the purpose of fixing a permanent rule for ascertaining the tax to be levied in future, for repairing these cross roads.

When this part of the statute came to be reduced into practice, it was proposed by a very respectable gentleman, who had a principal hand in the framing of the statute, and who now sleeps with his fathers *, that in place of taking the plowgates

¶ It would seem, that when the statute of Charles II. was passed, it was the custom in this county, as it is in many parts of Scotland, to this day, for the tenants, in proportion to the extent of their farm, to labour, sow, reap, and carry home the crop of the lands in the natural possession of their landlord. I have known a landed proprietor in the North country, possessed of a tolerably extensive farm in his own natural possession, without a hoof upon it, excepting milk cows and saddle horses ; and his tenants furnished so many days for leading out dung, for plowing, sowing, harrowing, and so many reapers in hay and harvest time, for cutting and carrying home the crop. This seems to me the reason why the lands in the natural possession of the heritor was not mentioned in this ancient statute.

* The late Lord Coalstown.

as they then stood, the ploughs should be taken, as nearly as possibly could be ascertained, according to the number used in the year 1750, which, being prior to the commencement of any improvement, would put the county upon an equal footing; whereas, if taken at the time of passing this second act, an inequality might ensue, as improvements in some places had made considerable progress; and, besides, that some ploughs were worked with three horses, a few with two horses, while, in other parts of the county, the ancient practice of plowing with four horses continued.

The motion was agreed to, and the plowgates were taken up, according to that rule, where it could be found, and failing of it, by the then actual state, making an allowance for improvements; and the small quantity of grass grounds then let in pasture, were estimated at about 50 acres to the plough $\frac{1}{2}$.

It was then supposed, and I believe corresponded nearly with the fact, that in the year 1750, there was only one cart kept for four horses; and as the ancient statute spoke only of carts, the conversion was struck at 20 s. as the supposed value of two horses and a cart for six days.

The total number of ploughs that were then employed in the county, amounted, by the parochial reports, to about 1216.

Taking each plough at a pound, and a small additional sum levied from the householders in the royal burrows, where rents are above 20s. the sum of 300l. or thereabout, has been annually employed upon the cross roads ever since.

If the aggregate calculation of 23 years of this sum shall be taken, every man, at first sight, will say, that all the cross roads in the county should have been completely made.—But when it is considered, that this sum must be divided into 23, for the number of years; and, *2dly*, into 25, for the number of parishes, and then again subdivided, and to be applied to a considerable number of roads in each parish, it will not ap-

$\frac{1}{2}$ Perhaps this was not so correctly done.

appear surprizing, that, after so many subdivisions of this fund, there should still remain many of these cross roads to be made; especially when it is considered, that a piece of road, which required 20 shillings last year, to make it, will require 3 shillings this year, to repair the breaches that have been made in it, during the course of the preceding winter; and progressively as it becomes older, it requires more money annually to repair it.

But, independent of this, two circumstances have of late occurred, very considerably to distress the cross roads; the one is the general use of lime, as a manure, and the other is the extraordinary load that every cart now carries, from what they did 30 years ago; and to these two may be added, the excessive wetness from the beginning to the end of the year 1792.

The 2^d turnpike act was current only to Whitsunday 1793, and to the end of the then next session of Parliament; and, in winter 1792-3, a new turnpike act was applied for, in which a power of erecting toll-gates, and of levying tolls, upon some other of the great leading cross roads of the county, was obtained.

CONCLUSION.

BEING now very desirous of saying AMEN to this Report, I shall draw it to a conclusion by the following short observations:

In the preceding narrative, I have nearly followed that arrangement, which originally suggested itself to my mind, when I undertook the business, although I am somewhat apprehensive it may not meet the approbation of the Honourable Board; and some of my friends, to whom I have communicated the manuscript, obligingly offered to throw it into a different arrangement altogether. But I declined this offer, be-

cause I consider the Report I have now the honour of presenting, voluminous as it may seem, merely an atom in the general mass of information, that must be laid before the Honourable Board: And I confess, upon that account, I was more anxious that the matter should prove useful, as far as a faithful narrative of facts can render it so, than to seem minutely nice and critical, either in the arrangement of that matter, or the language that cloathed it; and, provided the ideas shall be clearly understood, I feel no further solicitude upon that point.

Besides, I fairly acknowledge, that I have always found a deductive narrative, even, of more interesting facts than a report upon rural oeconomy can possibly contain, tedious and fatiguing to the mind; and, for my own relief in this particular, I have occasionally introduced short digressions, which, although they are not, I trust, altogether foreign and impertinent to the subject, have, some of them, but a remote analogy to it.

2dly, As to the ancient, or what may be called the historical facts, I have in general referred to the authorities, and to the evidence, that has led my mind to yield belief to their authenticity; but every person is certainly at liberty to weigh that evidence, and to give it such a degree of credit only, as it shall seem entitled to.

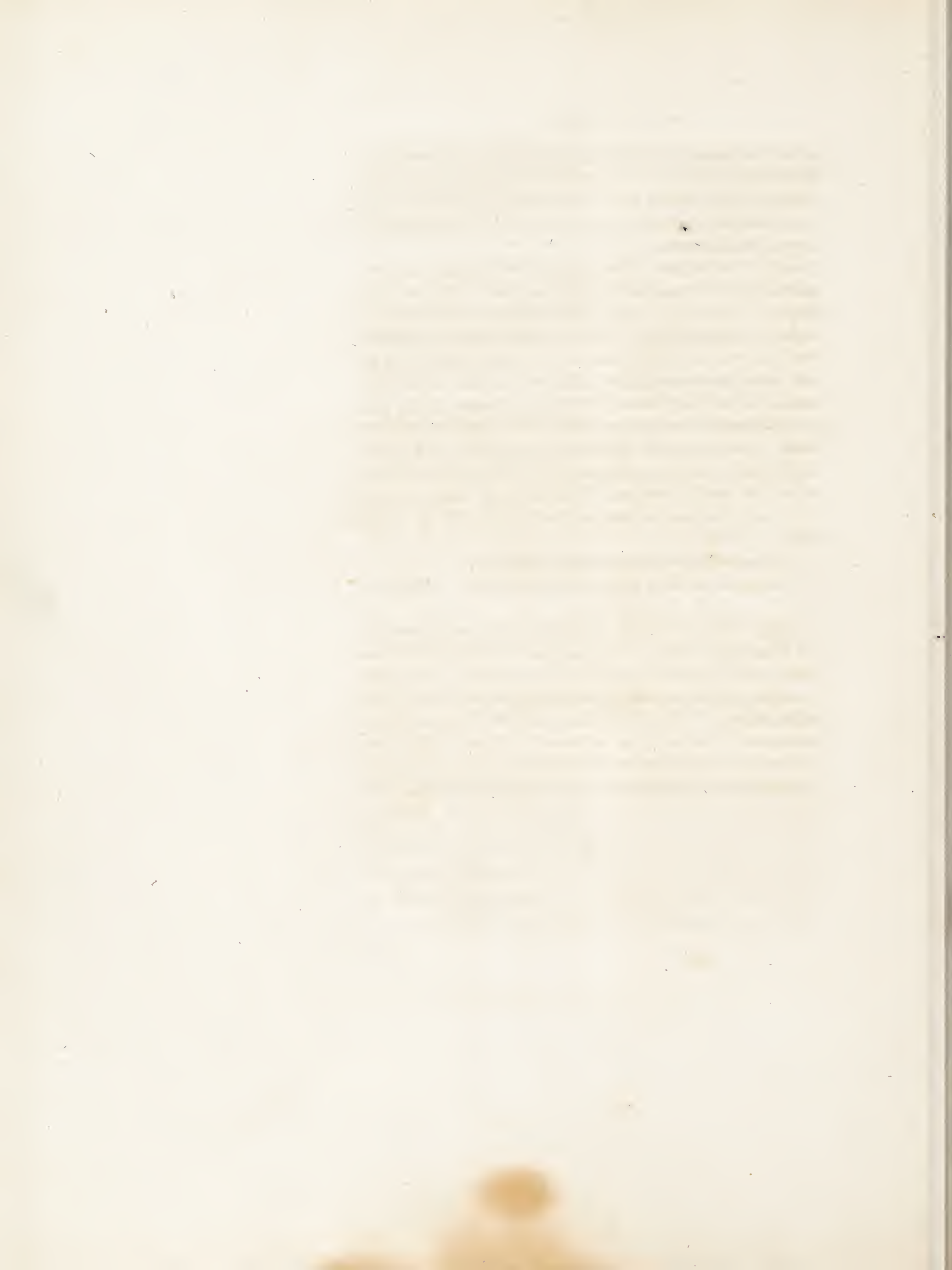
3dly, In the statement of the modern facts, I have no further merit than in putting them together; and I take this opportunity of acknowledging the obligations I lie under in this particular, to many of the tenants in this county, with several of whom I have had repeated conversations, and with others I have corresponded, upon the subject of our modern agriculture in its various branches; and it is doing no more than justice to say, that one and all of them came forward with the utmost frankness, not only to communicate every particular relative to their own individual practice; but they also investigated other points I was desirous of being informed of, with the utmost anxiety to render this Report accurate and correct; and

if, in this particular, it shall find any favour in the eye of the Honourable Board, the merit is truly due, not to me, but to those men, who, with a degree of modesty equal to their merit, have prevailed upon me, contrary to my original intention, to suppress their names.

4thly, With regard to the reasoning or opinions I have hazarded upon the various subjects contained in the preceding Report, I have stated them with freedom, and perhaps too loosely for the public eye, that is, without due examination; but as I write neither for fame nor for profit, but from a sincere desire to communicate, as far as in me lies, useful information; I trust the Honourable Board, and every candid reader, will set off any errors that may be discovered, and will place them to the credit of the motive that may have led me into the mistake; and, under that impression, I give the whole matter to the public, without responsibility or anxiety as to its fate; or, to borrow the idea and the language of an ancient poet.

————— *Si quid novisti rectius istis,*
Candidus imperti: Si non, his utere mecum. HORAT.

Lastly, I shall conclude, as I began, with cordially wishing the Honourable Board of Agriculture and Internal Improvement, every degree of success that their pursuits, to the public so useful, and to themselves individually so honourable, most justly deserve. And if, in future, it shall be thought that any exertions of mine can tend to promote this great object, it will give me pleasure to receive their further directions, and I shall be happy in executing them to the best of my abilities.—*Vale*



APPENDIX.

THE PRICES OF GRAIN, BY THE HADDINGTON FIARS.

IN page 39th of this Report, an Account is given of the nature of what are called the Fiar, or Average Prices of the different kinds of Grain; and as those of EAST LOTHIAN are reckoned the most accurate and best kept of any in Scotland, it was thought proper to print them as an Appendix to this Report, with the progressive Average of 20 years, which tends to throw additional light upon the subject.

Crops.	1st Wheat.		2d Wheat.		3d Wheat.		1st Barley.		2d Barley.		3d Barley.		1st Oats.		2d Oats.		3d Oats.		1st Pease.		2d Pease.		3d Pease.		Years when the Fiar of the respective crops were struck.
	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	
	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	S. D. 12lb.	
1627	16 8						14 5 4																		1628
28	20 0						16 8																		29
29	22 2 8						20 0																		1630
1630	23 4						18 4																		31
31	25 0						21 8																		32
32	28 4						13 10 8																		33
33	26 1 4						13 10 8																		34
34	11 8						8 4																		35
35	25 6 8						10 8																		36
36	23 4						16 8																		37
37	18 4						13 4																		38
38	11 8						7 9 4																		39
39	15 0						13 4																		1640
1640													13 4												41
41	16 8						15 0						11 8												42
42	15 10						13 4						10 0												43
43	13 4						11 1 4						8 4												44
44	14 2						11 8						10 0												45
45	11 8						8 4						5 0												46
46	11 8						8 10 8						5 10												47
47	18 4	17 5 4					12 6	13 9 6					10 6 8												48
48	25 0	17 10 4					15 3 4	13 10					13 4												49
49	18 4	17 9 4					16 8	13 10					13 4												1650
1650	13 10 8	17 10 4					25 0	14 1					18 4												51
51	22 6	17 9 10 10				18 4	23 4	14 4	21 8		20		17 9 4		16 1 4		14 2		18 4		16 8		15 10		52
52	18 4	17 5 10 16 8				15 10	16 1 4	14 8	14 2		12 6		14 2		12 6		11 1 4		8 4		6 8		5 6 8		53
53	11 8	17 1 10 10 6 8				8 4	10 0	13 10 4	8 4		7 6		7 2 8		5 6 8		4 2		6 8		3 4		2 2 8		54
54	8 4	16 9 2 6 8				5 2 8	8 4	13 7	7 2 8		5 10		4 5 4		3 10 8		3		5		3 4		5 6 8		55
55	11 1 4	16 8 10 8 10 8				7 9 4	10 0	13 8	8 4		6 8		6 1 4		4 2		3 4		8 4		6 8		4 5 4		56
56	13 4	16 1 6 11 8				10 6 8	11 1 4	13 4 8	8 10 8		7 9 4		7 9 4		5 6 8		4 8		5						57

APPENDIX.—PRICES OF GRAIN BY THE HADDINGTON FLARS,—CONTINUED.

Crop.	1st Wheat.		2d Wheat.		3d Wheat.		1st Barley.		2d Barley.		3d Barley.		1st Oats.		2d Oats.		3d Oats.		1st Pease.		2d Pease.		3d Pease.		Years when the flars of the respective crops were struck.
	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	
1657	S. D. 12 9	15 7	S. D. 11 1	11 1	S. D. 10 8	10 8	S. D. 15 10	13 4	S. D. 14 2	14 2	S. D. 11 8	11 8	S. D. 7 9	4	S. D. 6 1	4	S. D. 5 0	5 0	S. D. 6 8	6 8	S. D. 5 0	10	S. D. 4 2	4 2	1658
58	12 9	15 8	11 1	11 1	10 8	10 8	15 10	13 4	14 2	14 2	11 8	11 8	7 9	4	6 1	4	5 0	5 0	6 8	6 8	5 0	10	4 2	4 2	59
59	12 0	16 1	11 2	11 2	10 8	10 8	15 0	13 5	14 3	14 3	11 1	11 1	7 10	4	6 2	4	5 1	5 1	6 9	6 9	5 1	10	4 3	4 3	1660
1660	16 8	16 2	11 5	11 5	10 8	10 8	13 4	13 8	14 2	14 2	11 1	11 1	10 4	10 4	6 10	8	5 10	5 10	18 4	18 4	17 2	8	4 5	4 5	61
61	19 2	16 3	11 8	11 8	10 8	10 8	14 5	13 7	14 3	14 3	12 6	12 6	9 5	4	6 10	8	5 10	5 10	9 2	9 2	8 4	8	4 5	4 5	62
62	15 10	16 3	11 5	11 5	10 8	10 8	11 8	13 6	14 2	14 2	10 8	10 8	9 2	4	6 10	8	5 10	5 10	10 0	10 0	8 4	8	4 5	4 5	63
63	13 10	16 4	12 9	12 9	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	64
64	11 1	16 2	12 9	12 9	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	65
65	11 8	16 2	12 10	12 10	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	66
66	8 4	16 2	12 10	12 10	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	67
67	8 7	15 6	12 9	12 9	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	68
68	10 10	14 9	12 9	12 9	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	69
69	10 0	14 4	10 9	10 9	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	1670
1670	10 0	13 8	10 9	10 9	11 8	11 8	10 6	13 5	14 2	14 2	10 8	10 8	9 8	10 4	6 10	8	5 10	5 10	11 8	11 8	10 6	10	4 5	4 5	71
71	18 4	13 6	16 8	16 8	12 2	12 2	10 4	11 2	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	72
72	11 1	13 1	10 10	10 10	11 10	11 10	10 4	11 2	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	73
73	11 1	13 1	10 10	10 10	11 10	11 10	10 4	11 2	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	74
74	21 5	13 9	20 6	20 6	12 6	12 6	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	75
75	19 2	14 2	18 4	18 4	13 0	13 0	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	76
76	12 2	14 1	11 1	11 1	12 11	12 11	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	77
77	11 11	14 0	10 11	10 11	12 11	12 11	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	78
78	13 4	14 8	10 12	10 12	12 8	12 8	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	79
79	16 1	13 6	10 10	10 10	12 6	12 6	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	1680
1680	11 0	13 3	10 10	10 10	12 6	12 6	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	81
81	10 6	12 10	10 10	10 10	12 6	12 6	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	82
82	13 4	12 8	11 1	11 1	12 8	12 8	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	83
83	11 8	12 7	10 11	10 11	12 8	12 8	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	84
84	12 2	12 7	10 11	10 11	12 8	12 8	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	85
85	10 6	12 7	10 11	10 11	12 8	12 8	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	86
86	10 6	12 7	10 11	10 11	12 8	12 8	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	87
87	9 2	12 8	10 8	10 8	11 9	11 9	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	88
88	8 10	12 7	10 8	10 8	11 9	11 9	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	89
89	13 10	12 9	11 13	11 13	12 8	12 8	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	1690
1690	15 6	13 1	21 4	21 4	12 2	12 2	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	91
91	12 10	12 9	10 12	10 12	11 11	11 11	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	92
92	11 8	12 10	11 1	11 1	12 2	12 2	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	93
93	14 8	12 10	11 1	11 1	12 2	12 2	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	94
94	14 4	12 8	21 3	21 3	11 10	11 10	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	95
95	16 8	12 6	8 16	8 16	11 9	11 9	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	96
96	21 8	13 0	42 1	42 1	12 3	12 3	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	97
97	20	13 5	21 9	21 9	12 7	12 7	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	98
98	26 8	14 1	22 5	22 5	13 3	13 3	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	99
99	25	14 6	23 10	23 10	13 9	13 9	10 4	11 4	10 8	10 8	10 4	10 4	9 2	2	6 7	5	5 8	5 8	10 10	10 10	8 6	10	6 6	6 6	1700



APPENDIX.—PRICES OF GRAIN BY THE HADDINGTON FLARS,—CONTINUED.

Crops	1st Wheat.		2d Wheat.		3d Wheat.		1st Barley.		2d Barley.		3d Barley.		1st Oats.		2d Oats.		3d Oats.		1st Pease.		2d Pease.		3d Pease.		Years when the crops were struck.
	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	
1700	16 1 4	14 9 6	15 0 0	14 0 0	13 10 0	12 10 0	15 6 8	12 6 8	14 5 4	11 9 8	12 9 4	10 11 2	10 0 0	9 3 5	8 10 0	8 6 0	7 2 2	7 8 4	9 5 4	10 7 8	8 4 0	9 8 9	7 2 2	8 10 5	1701
01	11 1 4	14 9 10	10 3 4	14 0 0	2 9 5	4 13 0	4 10 0	12 7 7	9 5 4	11 10 4	8 4 0	10 11 6	7 2 8	9 2 9	6 8 8	8 5 3	6 1 1	7 7 4	5 0 0	10 4 3	4 8 0	9 6 3	4 2 2	8 8 5	02
02	10 6 8	14 8 2	10 0 0	13 10 6	9 5 4	12 11 1	10 6 8	12 5 5	10 0 0	11 8 2	9 2 0	10 9 6	7 9 4	9 1 7	7 2 2	8 4 3	6 8 8	7 6 10	8 4 0	10 2 3	7 2 2	9 4 1	6 8 8	8 6 3	03
03	14 5 4	14 19 13	13 4 0	13 11 10	12 2 8	13 0 4	12 6 8	12 7 2	11 8 0	11 10 0	11 1 4	10 11 5	8 4 4	9 2 10	7 6 6	8 5 5	6 8 8	7 7 10	7 9 4	10 2 4	7 2 2	9 5 5	6 8 8	8 7 5	04
04	12 9 4	14 10 2	11 8 0	14 0 0	2 11 0	4 13 0	4 10 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	05
05	10 4 0	14 10 1	9 5 4	14 0 0	1 8 7	4 13 0	4 10 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	06
06	8 4 0	14 8 6	7 9 4	14 0 0	3 10 0	4 13 0	4 10 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	07
07	11 8 0	14 10 3	10 10 0	14 0 0	3 10 0	4 13 0	4 10 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	08
08	15 0 0	15 1 11	14 2 0	14 3 4	13 4 0	13 3 10	11 8 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	09
09	21 1 4	15 5 2	12 10 0	14 7 8	11 8 0	13 6 10	14 4 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	10
10	13 4 0	15 5 2	12 10 0	14 7 8	11 8 0	13 6 10	14 4 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	11
11	13 4 0	15 5 2	12 10 0	14 7 8	11 8 0	13 6 10	14 4 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	12
12	13 4 0	15 5 2	12 10 0	14 7 8	11 8 0	13 6 10	14 4 0	12 6 8	9 2 0	11 11 8	8 4 0	11 11 8	7 6 8	9 3 6	7 6 6	8 6 3	6 8 8	7 8 4	7 9 4	10 2 4	7 2 2	9 4 9	6 8 8	8 6 11	13
13	18 4 0	15 8 6	16 8 0	14 8 0	11 8 0	13 7 10	11 8 0	13 0 0	9 5 4	13 0 0	11 8 0	12 2 3	10 0 0	9 7 8	9 5 4	8 10 5	6 8 8	7 11 11	11 6 8	10 1 5	10 10 0	9 3 9	10 3 4	8 5 6	14
14	12 6 0	15 7 4	11 8 0	14 11 2	11 1 4	13 7 10	11 8 0	13 0 0	9 5 4	13 0 0	11 8 0	12 2 3	10 0 0	9 7 8	9 5 4	8 10 5	6 8 8	7 11 11	11 6 8	10 1 5	10 10 0	9 3 9	10 3 4	8 5 6	15
15	14 4 0	15 6 0	13 4 0	14 1 4	12 6 0	13 6 10	11 8 0	13 0 0	9 5 4	13 0 0	11 8 0	12 2 3	10 0 0	9 7 8	9 5 4	8 10 5	6 8 8	7 11 11	11 6 8	10 1 5	10 10 0	9 3 9	10 3 4	8 5 6	16
16	12 6 0	15 6 0	11 8 0	14 1 4	12 6 0	13 6 10	11 8 0	13 0 0	9 5 4	13 0 0	11 8 0	12 2 3	10 0 0	9 7 8	9 5 4	8 10 5	6 8 8	7 11 11	11 6 8	10 1 5	10 10 0	9 3 9	10 3 4	8 5 6	17
17	12 10 0	14 8 2	11 8 0	13 8 10	10 10 0	12 8 0	9 9 7	12 2 6	8 7 4	11 5 7	9 9 2	10 10 0	7 6 0	9 3 1	6 11 0	8 6 4	6 4 0	7 7 11	6 4 0	9 10 9	5 5 0	9 0 1	5 3 4	8 8 5	18
18	12 2 8	13 11 1	11 8 0	13 0 6	10 8 0	12 0 8	10 10 0	11 7 10	10 0 0	10 5 8	9 2 4	10 6 7	8 6 0	9 2 2	1 18 0	8 4 11	7 2 0	7 6 10	7 2 0	9 8 5	5 6 0	9 0 1	5 3 4	8 8 5	19
19	12 8 0	13 4 1	11 10 0	12 5 3	11 1 4	11 6 4	12 6 0	11 2 2	11 8 0	10 5 3	10 1 4	9 11 5	9 2 0	8 5 3	9 7 11	8 0 0	7 0 0	7 2 4	6 6 0	8 10 4	5 10 0	8 0 1	5 3 0	7 2 11	20
20	12 9 4	13 2 1	11 4 0	12 3 10	10 4 0	11 4 6	11 3 0	10 11 7	11 1 4	10 11 5	9 2 0	10 2 4	8 7 4	8 5 6	9 7 10	7 8 8	6 11 4	6 11 0	7 8 0	8 6 7	10 0 0	7 9 6	6 2 5	6 11 3	21
21	13 4 0	13 3 5	12 8 0	12 4 6	11 8 0	11 5 10	9 10 0	10 11 5	9 2 0	10 11 5	9 2 0	10 2 4	8 7 4	8 5 6	9 7 10	7 8 8	6 11 4	6 11 0	7 8 0	8 6 7	10 0 0	7 9 6	6 2 5	6 11 3	22
22	15 0 0	13 6 1	14 2 0	12 7 13	13 4 0	11 8 2	11 6 0	11 0 8	2 11 6	11 0 9	12 8 0	10 3 4	10 0 0	9 6 1	7 7 6	7 8 8	6 8 8	6 11 7	7 9 7	8 8 4	8 8 0	7 8 6	7 1 3	23	
23	13 4 0	13 5 5	12 6 0	12 6 6	11 8 0	11 7 10	13 8 0	11 0 9	12 8 0	11 0 9	12 8 0	10 3 4	10 0 0	9 6 1	7 7 6	7 8 8	6 8 8	6 11 7	7 9 7	8 8 4	8 8 0	7 8 6	7 1 3	24	
24	14 5 4	13 6 5	13 4 0	12 7 6	12 6 0	11 8 9	11 1 4	11 0 9	12 8 0	11 0 9	12 8 0	10 3 4	10 0 0	9 6 1	7 7 6	7 8 8	6 8 8	6 11 7	7 9 7	8 8 4	8 8 0	7 8 6	7 1 3	25	
25	16 8 0	13 10 3	15 10 0	12 11 4	14 4 0	12 0 2	2 11 1	11 1 4	11 0 9	11 1 4	11 0 9	10 4 5	9 6 0	9 7 1	8 6 0	8 7 8	8 8 0	7 11 1	7 6 0	8 10 1	10 6 0	8 0 2	8 8 0	7 1 3	26
26	14 4 0	14 1 10	13 4 0	13 2 8	12 6 0	12 0 2	2 11 1	11 1 4	11 0 9	11 1 4	11 0 9	10 4 5	9 6 0	9 7 1	8 6 0	8 7 8	8 8 0	7 11 1	7 6 0	8 10 1	10 6 0	8 0 2	8 8 0	7 1 3	27
27	15 10 0	14 4 4	14 8 0	13 5 13	13 0 0	12 5 2	13 0 0	11 6 2	11 4 0	11 6 2	11 4 0	10 8 10	9 10 0	9 9 3	9 9 0	8 11 7	8 8 0	8 2 2	6 6 0	7 5 3	13 10 0	8 0 5	7 9 4	7 6 11	28
28	16 8 0	14 5 11	14 8 0	13 5 13	13 0 0	12 5 2	13 0 0	11 6 2	11 4 0	11 6 2	11 4 0	10 8 10	9 10 0	9 9 3	9 9 0	8 11 7	8 8 0	8 2 2	6 6 0	7 5 3	13 10 0	8 0 5	7 9 4	7 6 11	29
29	15 4 0	14 1 8	13 4 0	13 1 7	12 10 0	12 4 9	15 0 0	11 6 2	11 4 0	11 6 2	11 4 0	10 8 10	9 10 0	9 9 3	9 9 0	8 11 7	8 8 0	8 2 2	6 6 0	7 5 3	13 10 0	8 0 5	7 9 4	7 6 11	30
30	13 4 0	14 1 9	12 2 0	13 1 7	12 10 0	12 4 9	15 0 0	11 6 2	11 4 0	11 6 2	11 4 0	10 8 10	9 10 0	9 9 3	9 9 0	8 11 7	8 8 0	8 2 2	6 6 0	7 5 3	13 10 0	8 0 5	7 9 4	7 6 11	31
31	12 0 0	14 0 10	10 9 2	13 0 2	11 0 4	12 0 4	9 9 4	11 2 8	8 4 0	11 2 8	8 4 0	10 4 2	7 8 0	9 7 8	1 18 0	8 4 3	7 0 8	7 5 11	8 8 0	9 8 8	8 8 0	8 9 6	6 8 0	7 11 2	32
32	10 0 0	13 10 10	9 2 0	12 10 2	8 10 0	11 9 7	7 8 0	11 2 8	8 4 0	11 2 8	8 4 0	10 4 2	7 8 0	9 7 8	1 18 0	8 4 3	7 0 8	7 5 11	8 8 0	9 8 8	8 8 0	8 9 6	6 8 0	7 11 2	33
33	13 6 0	13 8 12	4 0	12 7 11	7 10 0	11 7 6	10 2 0	11 2 8	8 4 0	11 2 8	8 4 0	10 4 2	7 8 0	9 7 8	1 18 0	8 4 3	7 0 8	7 5 11	8 8 0	9 8 8	8 8 0	8 9 6	6 8 0	7 11 2	34
34	15 0 0	13 9 10	13 4 0	12 9 13	4 0	11 8 10	10 2 0	11 2 8	8 4 0	11 2 8	8 4 0	10 4 2	7 8 0	9 7 8	1 18 0	8 4 3	7 0 8	7 5 11	8 8 0	9 8 8	8 8 0	8 9 6	6 8 0	7 11 2	35
35	15 0 0	13 9 10	13 4 0	12 9 13	4 0	11 8 10	10 2 0	11 2 8	8 4 0	11 2 8	8 4 0	10 4 2	7 8 0	9 7 8	1 18 0	8 4 3	7 0 8	7 5 11	8 8 0	9 8 8	8 8 0	8 9 6	6 8 0	7 11 2	36
36	13 1 0	13 10 3	11 8 0	12 9 10	6 0	11 8 12	0 0	11 2 8	8 4 0	11 2 8	8 4 0	10 4 2	7 8 0	9 7 8	1 18 0	8 4 3	7 0 8	7 5 11	8 8 0	9 8 8	8 8 0	8 9 6	6 8 0	7 11 2	37
37	13 4 0	13 10 6	12 4 0	12 9 10	6 0	11 8 12	0 0	11 2 8	8 4 0	11 2 8	8 4 0	10 4 2	7 8 0	9 7 8	1 18 0	8 4 3	7 0 8	7 5 11	8 8 0	9 8 8	8 8 0	8 9 6	6 8 0		

APPENDIX.—PRICES OF GRAIN BY THE HADDINGTON FLARS,—CONTINUED.

Crops	1st Wheat.		2d Wheat.		3d Wheat.		1st Barley.		2d Barley.		3d Barley.		1st Oats.		2d Oats.		3d Oats.		1st Peafe.		2d Peafe.		3d Peafe.		Years when the flars of the respective crops were struck.	
	Yearly Prices.		Average of 20 Yrs		Yearly Prices.		Average of 20 Yrs		Yearly Prices.		Average of 20 Yrs		Yearly Prices.		Average of 20 Yrs		Yearly Prices.		Average of 20 Yrs		Yearly Prices.		Average of 20 Yrs			
	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths	S. D.	12ths		
1743	9	8	14	0	2	8	8	12	9	7	8	0	11	8	9	8	4	11	1	2	7	4	10	1	4	744
44	11	6	13	10	5	9	8	12	7	4	9	0	11	6	8	10	6	11	1	4	8	6	10	1	7	745
45	15	10	13	9	11	14	4	12	6	5	13	4	11	6	1	10	10	6	1	10	10	6	10	1	7	746
46	13	6	13	9	5	12	6	12	5	11	11	8	11	5	11	0	11	2	2	9	10	10	6	10	1	747
47	13	8	13	8	1	12	10	12	4	10	11	8	11	4	8	11	4	10	1	11	6	10	1	7	748	
48	14	6	13	6	10	13	8	12	4	3	12	6	11	4	6	11	4	10	1	11	6	10	1	7	749	
49	13	4	13	5	10	12	2	12	3	3	11	6	11	4	2	10	3	10	1	11	6	10	1	7	750	
50	13	6	13	5	11	12	11	12	3	8	12	6	11	5	10	11	9	7	7	10	10	6	10	1	751	
51	17	2	13	9	16	2	12	3	6	11	15	0	11	8	1	12	0	11	0	10	11	0	11	0	752	
52	15	0	14	0	14	0	12	9	10	13	4	11	4	1	12	2	10	2	11	11	8	10	1	7	753	
53	15	0	14	0	17	13	10	12	10	8	12	6	11	11	8	13	10	11	6	3	12	8	10	1	754	
54	12	11	13	11	8	11	6	12	9	10	13	4	11	10	2	10	3	11	6	4	8	10	1	7	755	
55	13	10	13	10	11	12	10	12	8	10	14	0	11	10	1	10	9	10	5	1	10	9	10	1	756	
56	22	6	14	4	7	20	6	13	2	1	19	2	12	3	4	17	0	11	9	6	15	1	10	1	757	
57	18	0	14	7	5	16	8	13	4	8	15	0	12	5	3	15	0	11	11	3	14	0	12	1	758	
58	15	0	14	9	10	13	6	13	6	10	12	0	12	6	10	10	6	12	0	1	10	6	12	1	759	
59	13	1	14	9	6	12	2	13	6	7	11	6	12	6	8	10	5	11	11	2	9	9	10	1	760	
60	13	6	14	4	1	12	0	13	1	10	11	0	12	2	4	9	9	11	5	10	11	0	12	1	761	
61	14	9	14	4	7	13	9	13	2	4	12	9	12	2	11	9	1	3	11	1	11	6	10	1	762	
62	19	4	14	9	5	18	6	13	7	7	15	4	12	1	7	15	4	6	11	7	15	4	6	10	763	
63	16	11	15	1	10	16	1	13	11	9	15	0	12	11	9	14	2	11	10	9	14	2	11	10	764	
64	18	10	15	6	3	18	1	14	4	10	17	0	13	4	7	14	7	12	1	13	10	6	11	0	765	
65	20	4	15	8	11	19	6	14	7	11	18	10	13	1	11	16	9	12	4	0	16	0	12	1	766	
66	20	0	16	0	10	19	0	14	11	10	19	7	13	11	10	19	7	12	9	2	18	11	3	11	767	
67	21	1	16	5	4	20	5	15	4	5	19	3	14	4	5	15	6	12	11	8	15	0	13	10	768	
68	20	8	16	9	11	19	7	15	8	0	18	1	14	7	10	12	10	9	14	7	10	12	10	9	769	
69	17	11	16	11	11	16	6	15	10	7	15	7	14	10	3	14	7	9	13	3	14	7	9	10	770	
70	18	0	17	2	6	16	10	16	0	11	16	0	15	0	5	14	2	6	15	0	5	14	2	6	771	
71	20	7	17	4	8	20	0	16	3	3	19	0	15	2	10	16	2	13	8	2	15	2	10	1	772	
72	22	4	17	9	1	11	1	16	7	6	20	2	15	6	11	18	4	13	11	4	17	3	11	10	773	
73	23	1	18	2	1	12	0	17	0	5	20	8	15	11	10	18	9	14	2	4	17	3	11	10	774	
74	20	11	18	6	9	20	2	17	5	8	18	9	16	4	7	18	4	14	7	18	4	10	1	11	775	
75	18	11	18	5	17	9	17	8	7	16	10	6	16	7	6	14	7	14	9	10	10	3	10	1	776	
76	18	1	18	7	2	17	1	17	6	7	15	10	16	5	7	11	11	11	11	11	11	11	11	11	777	
77	20	1	18	8	3	17	2	16	7	6	14	3	16	7	6	14	2	16	7	6	14	2	16	7	778	
78	17	9	18	10	1	19	0	17	10	3	16	2	16	10	1	14	3	14	8	3	16	2	16	10	779	
79	15	0	18	11	3	14	4	17	11	6	13	11	16	10	10	10	10	14	3	16	11	3	14	4	780	
80	20	2	19	3	3	19	0	18	3	9	17	11	17	11	8	14	4	14	11	8	13	11	3	14	781	
81	20	1	19	6	5	18	11	18	6	10	17	6	17	6	7	13	7	13	7	13	7	13	7	13	782	
82	25	4	19	10	1	23	10	18	10	1	22	4	17	9	4	23	1	14	10	1	22	4	17	9	783	
83	20	5	20	1	19	7	9	19	9	3	18	9	17	11	9	18	2	15	9	4	17	2	15	9	784	
84	21	0	20	1	5	20	4	19	1	7	19	2	18	1	1	19	1	16	0	1	19	1	16	0	785	
85	19	5	20	0	10	18	11	3	19	1	27	10	3	18	0	15	9	3	15	11	6	14	11	6	786	

APPENDIX.—PRICES OF GRAIN BY THE HADDINGTON FIARS,—CONTINUED.

Crops	1st Wheat.		2d Wheat.		3d Wheat.		1st Barley.		2d Barley.		3d Barley.		1st Oats.		2d Oats.		3d Oats.		1st Pease.		2d Pease.		3d Pease.		Years when the harvest of the respective crops were struck.	
	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.	Yearly Prices.	Average of 20 Yrs.		
	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.		
1786	19 4	3 20 0 5	18 7	19 1	17 10	6 18 0 4	17 11	6 15 10	16 5	3 15 1	15 5	6 14 2 11	14 6	13 0	13 8	3 12 2	7 12 7	6 11 4	7 16 9	12 8	0 15 7	6 11 10	8 14 2	3 10 11	1787	
87	21 4	9 20 0 5	20 8	3 19 1	1 20 1	9 18 0 10	17 0	3 15 11	16 3	9 15 2	4 15 1	6 14 3 3	14 0	9 12 11 11	13 4	12 2	4 12 7	6 11 4	3 13 10	12 7	5 12 9	6 11 9	3 11 10	3	1788	
88	22 0	20 1 4	21 2	3 19 2	1 20 5	9 18 2 3	14 4	9 10 0	4 14 0	3 13 3	1 13 5	14 4 7	10 8	3 12 11 11	10 1	12 2	7 9 5	11 4	5 9 4	12 4	3 8 6	11 6	8 5	10 8	10	89
89	23 6	6 20 4	22 4	8 19 5	6 20 10	18 5 5	17 9	16 2	2 17 4	15 5	6 16 4	6 14 6	9 14	3 13 1	3 13 2	12 10	11 7	6 11 5	1 14 2	6 12 6	5 12 9	3 11 8	3 11 6	3	1790	
1790	23 7	20 8	22 9	19 9	1 21 9	9 18 8 10	17 10	16 4	5 17 2	6 15 7	6 16 4	6 14 8	9 15	2 6 13 3	3 14 3	9 12 5	7 13 1	6 11 6	6 14 6	9 12 8	7 13 4	9 11 10	2 12 5	9 10 11	9	91
91	20 9	3 20 8	1 20	3 19 9	9 21 9	3 18 9	19 3	16 6	3 18 5	3 15 9	3 17 7	6 14 10	5 13 11	13 3	13 0	9 12 5	3 12 2	6 11 6	8 13 9	9 12 9	1 12 5	11 10	7 11 10	3 11 0	2	92
92	22 7	9 20 8	3 21	8 19 9	9 21 0	18 9 6	19 3	16 7	9 20 0	9 15 10	11 18 10	9 14 11	7 14	9 6 13 2	11 13 1	6 12 5	2 12 9	11 6	2 15 8	12 9	9 14 4	6 11 10	8 13 4	6 11 0	5	93
93	24 3	9 20 9	23 3	6 19 10	4 21 8	9 18 10 2	19 3	16 8	1 18 10	3 15 11	6 18 0	6 15 0	4 15 8	13 3	7 15 1	12 5	11 14 5	6 11 7	2 15 3	12 11	3 14 6	12 0	3 13 9	9 11 2		94
1794	25 6.3		23 11.3		22 3.3		22 1.3		21 2.		14.8.6		15 2.9		14.10.-		14.1.6		16.4.6		15.6.-		14.9.6			1795
1795	46.9.-		44 4.6		40 4.3		25 2.9		23.10.9		182.6		21.3.9		19.2.9		18 2.9		20.-4		18.9.-		17.9.6			1796
1796	27.2.6		25.10.6		24.5.-		23.-9		22 8.6		20.6.9		16.1.6		14.11.-		14.-		14.3.-		13.2.9		12.8.6			1797
1797	24.9.6		23.-6		21.-		19.4.9		17.9.2		15.5.-		14.2.-		13.-9		12		13.1.6		12.4.9		11.8.-			1798
1798	23.8		22.8.-		22.-		19.5.3		18.6.-		17.9.6		15.-6		14.8.-		14.-9		12.9.-		12.5.-		11.11.9			1799
1799	43.9.-		40 9.9		34.8.-		34.8.-		31 11.		29.2.-		32 4.6		28.7.6		25.-6		38.1.6		33.4.6		28.6.3			1800
1800	67.3.3	66.1.4	63.1.3		55.3.4		52.5		46 11.4		42.4.4	32.11.	38.1.4	35.8	35.8		30.9.4		46.2.4		41.6		36.2.4			1801
1801	37.5.9		35.7		32.4		28.5-		26.1.6		24.4-		18.7.3		17.4.3		15.11-		46.2.4		41.6		36.2.4			1802
1802	32 1 12				20.8.4		19 1/22						16 1/2					17.10		16.10.9		14.9			1803	
1803	24 1/2												18 1/6												1804	
1804	46 1 1/4		42 1/2		35 7 1/4		33 3 1/2		31 1/6		29 1/5		28 1/22		19 1/8		18 1/3		19 1/2		17 1/2		16 1/2			1805
1805	36 0 1/2				24 1/10		24 1/10																		1806	
1806	40 1/11				31 1/1		31 1/1																		1807	
1807	34 6 1/2				33 1/8 1/2		33 1/8 1/2																		1808	
1808																									1809	
1809																									1810	
1810	42 - 2						31 - 2/3																		1811	
1811																										

R/s 2
830
R/s

Cont 9
11/11

R2

LAWES
AGRICULTURAL
TRUST

